Calendar No. 176

100TH CONGRESS *1st Session*	SENATE	REPORT 100-80

TECHNOLOGY COMPETITIVENESS ACT OF 1987

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

together with

ADDITIONAL VIEWS

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 907

JUNE 22, 1987.—Ordered to be printed

Filed under authority of the order of the Senate of June 19, 1987

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Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

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[To accompany S. 907]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 907) to further U.S. technological leadership by providing for support by the Department of Commerce of cooperative centers for the transfer of research in manufacturing, and for other purposes, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and an amendment to the title and recommends that the bill do pass.

PURPOSE OF THE BILL

The purpose of the bill is to strengthen Department of Commerce technology programs so that they can better help U.S. industry improve its economic competitiveness. The bill renames the existing National Institute of Technology and gives it a new statement of mission; provides for centers for the transfer of manufacturing technology and other efforts to transfer federal technology; establishes an Advanced Technology Program; and requires reports on certain advanced technologies. The bill also creates an Office of Barter and Trade within the Department of Commerce; amends the International Air Transportation Fair Competitive Practices Act; and gives the Secretary of Commerce and the President authority

to investigate and respond to proposed foreign acquisitions of U.S. companies.

Background and Needs

Technology is the Nation's most important resource in international economic competition. The 1985 report of the President's Commission on Industrial Competitiveness (the Young Commission) summarized this point as follows:

> Technology propels our economy forward. Without doubt, it has been our strongest competitive advantage. Innovation has created whole new industries and the renewal of existing ones. State-of-the-art products have commanded premium prices in world markets, and technological advances have spurred productivity gains. Thus, America owes much of its standard of living to U.S. preeminence in technology.

However, the overall situation in American technology is not as strong as it should be. While the United States continues to lead the world in scientific discoveries, as reflected in Nobel Prize awards, and in the creation of technical innovations, other nations all too often are better at manufacturing and are faster at turning discoveries and innovations into successful commercial products.

The manufacturing problem was well stated by the President's Commission on Industrial Competitiveness:

> Manufacturing technology needs more emphasis. Perhaps the most glaring deficiency in America's technological capabilities has been our failure to devote enough attention to manufacturing or "process" technology. It does us little good to design state-of-the-art products, if within a short period of time our foreign competitors can manufacture them more cheaply.

New manufacturing technology can help solve these problems. In particular, computer-integrated manufacturing and flexible manufacturing systems promise great benefits in flexibility, quality, and cost-reduction, but more research and precise technical data are needed to make them a reality.

In product commercialization, the Japanese have used their superior design techniques and production processes to take the lead in putting new products into mass production. They have done this in basic manufacturing and in much of the semiconductor industry. Now the new Japanese Key Technology Center Program is funding 25 long-term research and development projects to develop the "generic" technology needed to speed product commercialization in such important emerging fields as advanced materials, biotechnology, and optical-electronics.

Last February, four days after University of Houston scientists announced a major breakthrough in superconducting materials, the Japanese government began to organize a research consortium of Japanese companies, universities, and government laboratories to exploit the discovery. A Japanese newspaper, quoted in the Wall Street Journal, summed up the intent: "The objective is to organize

industry to get the jump on the West in applications and commercialization for the huge new market."

American industry can and will do more fundamental research in both manufacturing and product commercialization. Companies have formed research consortia in a range of areas. However, at times companies might not have the incentive or the means to support the needed level of long-term research in these areas, particularly in this new era of government to government economic competition.

Particular needs exist in three areas: Federal research priorities, transferring the results of Federal research to potential users, and encouraging private sector efforts.

FEDERAL RESEARCH AND THE NATIONAL BUREAU OF STANDARDS

Federal civilian agencies spend approximately $15 billion a year on research and development. Valuable research is supported. Yet the total amount that all civilian agencies spend on fundamental or "generic" research in manufacturing totals less than $50 million per year; research to eliminate technical barriers to product commercialization also should receive more emphasis. More attention to research which helps manufacturing and commercialization is needed.

To help American industry meet the competitive challenge, more attention must be given to research which meets these technical needs. In particular, the Federal Government should place more emphasis on the Commerce Department's National Bureau of Standards (NBS), the one federal laboratory with an explicit mission to aid U.S. industry. The Bureau, in effect, provides American companies with the techniques and technical information they need to make products reliably. Bureau research gives industry the precise measurements, quality control techniques, engineering data, and basic technologies necessary to improve manufacturing and to overcome the technical obstacles to producing new commercial products. It also enables industry to make diverse pieces of equipment compatible. The total fiscal year 1987 appropriation for all Bureau programs is $122 million, only slightly above the fiscal year 1982 level of $120.3 million. However, world technology has changed a great deal during those five years, and the NBS should be upgraded to respond to these changes.

TECHNOLOGY TRANSFER

In total, the Federal Government spends approximately $60 billion per year on research and development. Much of this research is conducted in some 700 Federal laboratories. At a time when U.S. companies face severe foreign competition, it would be valuable to improve the transfer of unclassified Federal research and inventions to the American firms, particularly technology from the Federal laboratories.

Congress has passed several laws in recent years to facilitate the transfer of unclassified Federal technology to industry and the States. The Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480) directed large Federal laboratories to establish Offices of Research and Technology Applications. The Patent and Trade-

mark Amendments of 1980 (P.L. 96-517) allowed small businesses and nonprofit groups such as universities to retain title to federally-funded inventions, in order to provide an incentive to commercialize those inventions. The Federal Technology Transfer Act of 1986 (P.L. 99-502) permits Federal agencies to allow their Government-owned laboratories to enter into cooperative research and development agreements with companies, States, and other parties.

Two aspects of technology transfer still warrant further attention. First, the National Bureau of Standards has an Advanced Manufacturing Research Facility (AMRF) program whose technical expertise would be useful to small and medium-sized American manufacturers. These small and medium-sized firms make a large percentage of the manufactured parts in this country, yet studies suggested that only around 10 percent of these firms have begun to automate. Testimony before the Committee suggests that many small manufacturers do not know where to turn for reliable information on automation options. Establishing a program to make existing NBS expertise on automation more widely available would help address this serious problem. The NBS expertise and technology already have been transferred to a Navy project which will use automated equipment to speed the production of spare parts.

Second, Federal and State agencies must find new ways to work with each other to speed the transfer of Federal technology to American business. New Federal laws and a proliferation of new State programs have created a situation of many new opportunities. Efforts are needed to develop innovative and effective forms of Federal-State communication.

ENCOURAGING NEW PRIVATE SECTOR RESEARCH

While the Federal Government supports basic research as well as generic research aimed at eliminating fundamental technical barriers to commercialization, private industry has the responsibility to apply this Federal research to develop actual groups of products. In the face of intense foreign competition and the high cost of research and development, more and more American companies are forming joint research and development ventures to pool their research efforts. These research ventures share information and in some cases create prototype products and processes, which each member company then can use to help develop its individual products. The National Cooperative Research Act of 1984 (P.L. 98-462) permits such research ventures. These joint ventures could prove to be a valuable response to the research consortia created by the Japanese and West Europeans.

However, at least two types of situations exist in which the American marketplace fails to create such research ventures, even though these ventures might assist the long-term competitiveness of an industry. In such situations, Federal encouragement and perhaps even a limited amount of Federal "seed money" may be necessary before an industry forms such a joint research venture. Financial assistance to small businesses with exceptionally promising new technologies may also be warranted.

One type of situation occurs when a vital industry is highly-fragmented, or financially hard-pressed, or both. Many older basic in-

dustries fall into this category. Few research ventures form in these industries without at least encouragement from the Federal Government. President Reagan decided, as part of his December 1986 decision on machine tool trade issues, to provide up to $5 million a year in Federal funds for three years for a joint venture in this industry. That Federal contribution will be made only if the private industry succeeds in raising $10 million per year.

The second type of market failure occurs when long-term research is needed in a new field where no immediate applications exist but where the eventual market will be huge. In such a situation, companies may be less likely to form joint research ventures, even though foreign competitors already are doing so. New superconducting materials appear to be an example. Here Federal encouragement and possibly seed money would help remedy the market failure.

The Department of Commerce needs clear authority to encourage the formation of these research ventures, through meetings, discussion groups, and other means. In cases of significant market failure, the Department also should have resources to stimulate private action.

FOREIGN ACQUISITIONS OF AMERICAN COMPANIES

The proposed purchase earlier this year of an 80 percent share of Fairchild Semiconductor Corporation by Fujitsu, Ltd. sparked Congressional interest concerning takeovers of American firms by foreign companies which raise national security considerations. This proposed purchase posed a number of national security concerns and raised questions about whether the Federal Government has or should have the authority to prevent such acquisitions.

Currently, there are several institutional and legal mechanisms for reviewing acquisitions by foreign companies. First, there is a Committee on Foreign Investment in the United States (CFIUS) composed of representatives of the Departments of Commerce, Defense, and State and headed by Treasury. The Committee was established in 1975 pursuant to Executive Order 11858. One of its principal functions is to review investments by foreign governments in the United States which, in the judgment of the Committee, might have major implications for United States national interests. The Committee has no legal power, however, to block of modify investments by foreign governments that it may find objectionable.

Secondly, the Defense Production Act of 1950 establishes a system of priorities and allocations of critical and strategic materials, a program to promote expansion of productive capacity and supply in defense related areas. This act does not provide the Government with the authority to prevent a foreign acquisition of a U.S. business when such acquisition would be contrary to U.S. defense interests, absent an open declaration of war or national emergency.

In addition, the Federal antitrust and securities laws can be used in some cases to prevent foreign acquisitions. However, there is a concern that these laws are not adequate to deal with all objectionable foreign acquisitions.

The Committee believes that the Federal Government needs more explicit authority to review acquisitions of American companies by foreign entities to ensure that our national security is not threatened.

Legislative History

The full Committee held two days of general hearings on technology and competitiveness on January 20 and February 24, 1987. On March 17, the Science, Technology, and Space Subcommittee held an additional hearing on Commerce Department technology programs.

As a result of the hearings, Senators Hollings and Riegle introdued S. 907 on April 3, 1987, with Senators Kerry, Inouye, Rockefeller, Adams, Bentsen and Shelby as cosponsors. After the bill's introduction, the full Committee held two additional days of hearings on April 28 and May 19.

The Committee considered an amendment in the nature of a substitute on June 4 and June 16, 1987. The Committee ordered S. 907, as amended by the substitute, reported favorably on June 16.

As reported, S. 907 incorporates other legislation designed to improve of the capabilities of Commerce Department technology activities and to provide for reports on important technologies. The reported version includes provisions from the following bills: S. 930, the Competitiveness Enhancement Act, introduced by Senator Bumpers and cosponsored by Senators Ford and Gore; S. 1319, the Federal Industrial Extension Act, introduced by Senators Rockefeller and McCain; S.880, the Superconductivity Competition Act, introduced by Senators Durenburger, Danforth, and Gore; S. 1275, the National Advisory Committee on Semiconductor Research and Development Act, introduced by Senator Sanford; and S. 116, the Barter and Countertrade Act, introduced by Senator Exon.

The reported version also includes provisions of H.R. 2160, the National Bureau of Standards Authorization Act, which passed the House of Representatives on June 4, 1987.

Finally, the reported bill includes a revision of an amendment offered to S. 907 by Senator Exon at the June 4 Executive Session to give the Secretary of Commerce authority to review foreign acquisition of U.S. businesses. Concerns were raised at the June 4 markup about the possible "chilling effect" the amendment might have on foreign investment in the United States, which resulted in an agreement that a hearing would be held on June 10th, on the amendment. It was also agreed that S. 907 and the amendment would be considered at the next Executive Session on June 16th. At the hearing on June 10th, testimony was received from Secretary Baldrige of the Department of Commerce and business witnesses. On June 16th, the Committee adopted the Exon amendment, as revised, by voice vote.

Summary of Major Provisions

As reported, S. 907 would:

1. Change the name of the National Bureau of Standards to the National Institute of Technology and improve its ability to

assist U.S. industry by changing its statement of mission and programs;

2. Create new Commerce Department technology extension services, including an Office of Extension Services at the National Institute of Technology, Centers for the Transfer of Manufacturing Technology, and a Clearinghouse on State and Local Initiatives in Productivity, Technology, and Innovation;

3. Establish an Advanced Technology Program within the Department of Commerce to encourage the formation of private sector research ventures and provide, in selective instances, research funds to such ventures and to small businesses;

4. Require reports on research policies for semiconductors, superconductors, fiber optics, and advanced manufacturing technology;

5. Establish an Office of Barter and Countertrade within the Commerce Department; amend the International Air Transportation Fair Practices Act; and provide the Secretary of Commerce and the President with authority to review and respond to proposed foreign acquisitions of American companies.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, DC, June 18, 1987.

Hon. Ernest F. Hollings,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the attached cost estimate for S. 907, the Technology Competitiveness Act of 1987.

If you wish further details on this estimate, we will be pleased to provide them.

With best wishes,
Sincerely,

Edward M. Gramlich,
Acting Director.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number: S. 907.
2. Bill title: Technology Competitiveness Act of 1987.
3. Bill status: As ordered reported by the Senate Committee on Commerce, Science, and Transportation, June 16, 1987.
4. Bill purpose: The bill redesignates the National Bureau of Standards as the National Institute of Technology (NIT), and describes the purposes and functions of the new agency. The bill authorizes $168 million for fiscal year 1988 for the activities of the NIT, including $2 million for amounts authorized but not appropri-

ated for the Cold Neutron Source Facility in 1987. This represents a $46 million increase over the fiscal year 1987 appropriation and a $37 million increase over the CBO baseline level for 1988 for the agency. The bill also creates within the NIT the Office of Extension Services to administer two new programs established by the bill: regional Centers for the Transfer of Manufacturing Technology, and a three-year Pilot State Technology Extension Program. The bill authorizes up to $18 million for 1988, up to $30 million for 1989, and up to $42 million for 1990 for the Centers and $2 million for each of the same years for the Technology Extension Program. The bill also authorizes for the NIT in 1988 such sums as may be necessary for adjustments in salary, pay, retirement, and other employee benefits required by law, and authorizes up to $4.9 million in 1988 for certain other ongoing programs of the Department of Commerce (DOC).

The bill also establishes and provides authorizations for two new programs within the DOC. An Advanced Technology Program is established to assist U.S. industry to commercialize new scientific discoveries and refine advanced manufacturing technologies; this program is authorized in the bill at an amount not to exceed $15 million for 1988. The bill also establishes a Clearinghouse on State and Local Initiatives to serve as a central repository of information on initiatives by these governments to enhance the competitiveness of American business. The bill authorizes appropriations for this program not to exceed $1 million in 1988, $1.5 million in 1989, and $2 million in 1990.

The bill requires the Secretary of Commerce to contract with the National Academies of Engineering and Sciences to review major policy issues regarding U.S. semiconductor technology and commercial and national defense applications of superconductors. In addition, the bill gives the Secretary of Commerce authority to investigate the effect of actual or attempted mergers, acquisitions, and takeovers by foreigners on national security and essential commerce.

5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1988	1989	1990	1991	1992
NIT authorizations:					
Specified:					
Existing programs	168				
Centers for Transfer of Manufacturing Technology	18	30	42		
Pilot State Technology Extension Program	2	2	2		
Estimated—for pay raises	2				
Total NIT authorizations	190	32	44		
Estimated outlays	147	64	45	10	1
Advanced Technology Program:					
Authorization level	15				
Estimated outlays	7	6	1	(1)	
Clearinghouse and State and local initiatives:					
Authorization level	1	2	2		
Estimated outlays	1	1	2	(1)	(1)
Other DOC programs:					
Authorization level	5	(1)			

	1988	1989	1990	1991	1992
Estimated outlays	4	(1)	(1)		
Total					
Authorization level	211	34	46		
Estimated outlays	159	72	48	10	1

[1] Less than $500,000

The costs of this bill fall within budget function 370.

Basis of estimate: This estimate assumes that the bill will be enacted prior to the beginning of fiscal year 1988 and that the full amounts authorized will be appropriated. The increases for salary, pay, retirement, and other employee benefits required by law for 1988 are estimated consistent with the CBO baseline projections. Outlays for existing and new programs are based on historical spending patterns for the programs involved or similar programs.

Based on information provided by the DOC, CBO estimates that the two contracts with the National Academies of Engineering and Sciences required by this bill would cost the federal government about $500,000 over the two-year period 1988 and 1989. It is estimated that the DOC would incur costs of approximately $350,000 per year if it were to conduct the investigations into mergers, acquisitions, and takeovers by foreigners as this bill permits, but does not require. Other provisions of this bill are not expected to result in significant additional costs.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: None:

9. Estimate prepared by: Carol Cohen.

10. Estimate approved by: James L. Blum, Assistant Director for Budget Analysis.

Regulatory Impact Statement

In accordance with paragraph 11(b) of Rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

NUMBER OF PERSONS COVERED

The legislation renames and modifies the National Bureau of Standards, provides for several new Department of Commerce programs to improve the transfer of Federal technology to the States, establishes an Advanced Technology Program to help create additional private sector research efforts, requires several reports, creates a Commerce Department Office of Barter and Countertrade, amends the Air Transportation Fair Practices Act, and provides the Secretary of Commerce and the President with authority to review and respond to proposed foreign acquisitions of American companies.

The legislation anticipates that a significant number of businesses, State agencies, and others will choose to apply for awards created under the technology provisions of this legislation, but that they will do so voluntarily.

With respect to the provisons dealing with review of foreign acquisitions, since the standard of review is national security, a narrower standard than the existing standard for review by the Committee of Foreign Investment in the United States, the provision will have a minimal additional regulatory impact.

ECONOMIC IMPACT

The legislation authorizes Federal spending, a total of $206.9 million in spending for fiscal year 1988, $82 million above the fiscal year 1987 appropriation for Commerce Department technology programs. Additional spending for fiscal years 1989 and 1990 is authorized for certain programs. These expenditures, by increasing the technological capabilities of the Nation and transferring technology to the private sector, should yield benefits to the economy as a whole.

PRIVACY

Private parties that choose to apply for centers or otherwise work with Department of Commerce technology programs may have to report inventions, patents, and royalties, and be subject to other similar intrusions into their privacy. These will be voluntary arrangements, however, and the terms will be negotiated before entering into the agreements.

Information collected by the proposed Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation will be subject to all provisions of the Privacy Act.

With respect to the provision dealing with review of foreign acquisitions, a confidentiality clause has been included to protect information submitted to the Secretary under this section. Information collected will be subject to all provisions of the Privacy Act.

PAPERWORK

The legislation requires a one-time report, in four parts, from the President to accompany the President's fiscal year 1989 budget submission. The report is to be a summary of the President's policies and budget proposals regarding research in four areas: semiconductors, fiber optics, superconducting materials, and advanced manufacturing technologies. The legislation also provides for two reports by the National Academies of Engineering and Sciences, one on the semiconductor industry and one on superconducting materials

The legislation requires that each State receiving grants under the Pilot State Technology Extension Program during the years of its existence shall submit annual reports to the Secretary of Commerce. At the end of fiscal year 1990, the Secretary is to submit a report to Congress.

The Secretary of Commerce also shall prepare and transmit to the Congress an annual report on State and local initiatives on productivity, technology, and innovation.

The proposed Office of Barter and Countertrade is to publish periodic lists of known commercial opportunities for barter transactions beneficial to United States enterprises.

The proposed amendment to the International Air Transportation Fair Competitive Practices Act would require that not later

than 120 days after receiving a complaint, the Secretary of Transportation shall report to House and Senate authorizing committees on actions taken in response to that complaint.

The provisions regarding review of foreign acquisitions require the Secretary to minimize paperwork and reporting burdens on affected persons and to coordinate reporting requirements under this section with existing law.

SECTION 1

The first section states the short title of the bill, the "Technology Competitiveness Act of 1987".

SECTION-BY-SECTION ANALYSIS

TITLE I—NATIONAL INSTITUTE OF TECHNOLOGY

SECTION 101

This section amends section 1 of the act of March 3, 1901 (the National Bureau of Standards Act) to state a new set of Findings and Purposes. The Findings stress that United States economic growth and industrial competitiveness require continual improvements in manufacturing and product technology and that the Federal Government should maintain a national science, engineering, and technology laboratory because in many instances manufacturers do not have the incentive to develop all necessary technical services. The purpose of the act is to establish a National Institute of Technology to perform this role.

SECTION 102

This section would amend section 2 of the 1901 NBS Act. Section 2(a) of the revised language establishes within the Department of Commerce a science and technology laboratory to be known as the National Institute of Technology. In effect, this subsection renames the existing National Bureau of Standards. Section 2(b) authorizes the Secretary of Commerce (and hence the Institute) to undertake a range of functions, particularly in research and information dissemination. Section 2(c) specifies specific activities that the Secretary may undertake in order to carry out the functions specified in section 2(b).

The Committee intends that the National Institute of Technology perform two basic functions: continue the Bureau of Standards' traditional function of providing the measurements, calibrations, and quality control techniques that American industry needs, and assist U.S. industry with the development of new generic technologies necessary to improve manufacturing and overcome scientific and technical barriers to the rapid commercialization of scientific discoveries and innovations. The traditional function remains vital to U.S. industrial competitiveness and should not be neglected.

The name "National Institute of Technology" is in no way intended to imply that the Institute should not conduct the scientific research necessary to carry out its mission. The new name reflects the ultimate goal of the Institute, which is to support the technological competitiveness of the United States. The Committee expects the Institute to conduct both scientific research and engineer-

ing and technical research in order to accomplish that goal, and considers scientists and engineers to be equally important to the Institute's operations.

Section 102(c) authorizes the Secretary, among other things, to conduct research on all of the telecommunications sciences. This language on telecommunications research has been included at the request of the Commerce Department. Traditionally, the NBS Act has served as the statutory authority for the Department's telecommunications research, and the Department wishes to ensure that it has continued legal authority to conduct this research. Therefore, the Committee has included the telecommunications language in the new statement of mission for the Institute. However, this language should in no way be interpreted as saying that telecommunications research currently performed by the Commerce Department's National Telecommunications and Information Administration (NTIA) should be transferred to the Institute. The Committee supports NTIA and its research program, and has included this section 102 provision only to ensure that the Department and NTIA have continued legal authority to perform telecommunications research. The Committee also recognizes that the National Bureau of Standards currently performs certain telecommunications-related research in areas such as computer networking and microwave measurements. The Committee does not intend that any of that research be transferred to NTIA by this bill.

SECTION 103

This section repeals older NBS language replaced by section 101.

SECTION 104

This section adds new sections 20 and 21 to the 1901 Act. New section 20 ("Reports to Congress") requires the Director to keep House and Senate authorizing committees fully informed with regard to all activities of the Institute and requires the Director to report on all changes in policies regarding fees for Institute services to industry.

The Committee does not intend that the Director produce large numbers of reports. Rather, when a major change is proposed in either Institute programs or in the structure of fees charged for Institute materials or services, the Committee expects that both it and the Committee on Science, Space, and Technology of the House of Representatives receive timely summaries of these proposals.

New section 21 ("Studies by the National Academies of Engineering and Sciences") authorizes the Director of the National Institute of Technology to periodically contract with the National Academy of Engineering and the National Academy of Sciences for advice and studies.

The Committee believes that the Academies can, on occasion, provide a useful forum in which industry, university, and government officials can jointly explore significant national needs and opportunities in manufacturing and emerging technologies. The advice resulting from Academy studies can help the Institute improve its contributions to American industry.

SECTION 105

This section makes technical changes in the 1901 Act to reflect the redesignation of the National Bureau of Standards as the National Institute of Technology.

TITLE II—TECHNOLOGY EXTENSION ACTIVITIES OF THE INSTITUTE

SECTION 201

This section further amends the 1901 Act by adding three new sections to that Act. New section 22 ("Office of Extension Services") establishes an Office of Extension Services in the National Institute of Technology, to serve as a point of contact for State and local governments and to administer the programs created by the next three new sections.

New section 23 ("Centers for the Transfer of Manufacturing Technology") directs that the Secretary, through the NIT Director, shall provide assistance for the creation and support of regional Centers for the Transfer of Manufacturing Technology. The objective of the Centers program is to enhance productivity and technological performance in U.S. manufacturing through the transfer of new basic manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States. Nonprofit institutions may apply for grants to establish such centers. Costs are shared, with the Commerce Department providing up to 50 percent of total costs. The Federal contribution is limited to 6 years. The Secretary shall subject each such application to merit review, peer review, or other similar process. The section authorizes appropriations of $18,000,000 for fiscal year 1988, $30,000,000 for fiscal year 1989, and $42,000,000 for fiscal year 1990.

The Committee believes that the expertise and basic technology developed at the Automated Research Manufacturing Facility (AMRF) at the National Bureau of Standards (to be renamed the National Institute of Technology) should be made more widely available to small and medium-sized manufacturers around the Nation. The purpose of the centers program is to provide a means by which to transfer this taxpayer-funded Federal expertise to these firms.

The legislation authorizes funds for 12 centers around the country, with 4 centers authorized to be created in fiscal year 1988, 4 in fiscal year 1989, and the last 4 in fiscal year 1990. The authorization levels are based on the premise that administrative costs at the Institute will be $6 million per year, plus an average of $3 million per year in Federal funds for each center.

These centers are to serve as demonstration and training facilities. The goal is to give small and medium-sized manufacturers places where they can go to see modern automated equipment in action, get a "hands-on" feel for various types of machines, obtain objective advice about the advantages and disadvantages of various types of automated machinery, see how these machines can make their type of products, and obtain basic training in automated equipment for themselves and their employees.

The Committee wishes to emphasize that the purpose of the centers program is not necessarily to recommend the most sophisticated or expensive types of automated equipment. For some companies, particularly medium-sized firms making precision parts and employing engineers, a state-of-the-art flexible manufacturing system capable of advanced computer-integrated manufacturing may be appropriate. For a smaller company, a single numerically-controlled lathe may be appropriate. The staff of these centers should work with interested business persons to explore what is the most appropriate and cost-effective approach for their individual situations. The centers should also help manufacturers explore the management and training styles most appropriate to different kinds of equipment and situations.

The Committee intends that the Institute may use Federal funds to purchase equipment, build facilities, and contribute to operating and maintenance costs, provided that in no case may the Secretary contribute more than 50 percent of a center's total costs. In-kind contributions, including donations of equipment from vendors, may count as a part of an applicant's proposed share of the cost, providing that they are calculated according to fair market prices and are relevant to the creation and operation of said center. The Committee does not intend that an applicant may use funds received or promised from another Federal agency as part of its share of center costs. However, the Committee encourages the participation of other Federal agencies, especially Federal laboratories, in center activities.

The Committee intends that the centers promote the transfer of technology, not serve as research centers to create new technology. Thus these centers differ from the engineering research centers created by the National Science Foundation. The technology transfer centers would, in effect, serve as demonstration and training operations, where business people could come to get "hands-on" experience with automated manufacturing equipment and receive objective information from the center's staff.

The Committee intends that the centers offer information, demonstrations, and training but that they do not recommend specific brands of equipment or software to business people. The role of the centers is to serve as information source and general consultant about the types of equipment an individual manufacturer might wish to consider. However, the Committee does not intend that center personnel become advocates for any specific brand, company, or product. After receiving general information or advice from a center, an individual business person should turn to vendors for discussions about which specific pieces of equipment, if any, that person may buy.

The Committee intends that each center have a flexible manufacturing system, using the general approach and computer control technology developed at the AMRF. Each flexible manufacturing system would include equipment made by different companies, preferably American but foreign if no reasonable American equivalent is available. Each center would also have individual small automated machines, such as numerically-controlled lathes and milling machines. The center could, on a selective basis, loan individual machines to small manufacturers for periods up to six

months in order to give those business people an opportunity to use the equipment in their own shops. Finally, the Institute is authorized to install other advanced production equipment developed at the Institute in the centers. For example, one center might have equipment and techniques used to produce advanced ceramics; another could have equipment for advanced construction techniques for bioprocess engineering. Thus while each center will be built around a flexible manufacturing system and related manufacturing equipment, the Institute may have each center, or selected centers, specialize as well in other types of production equipment.

The Committee hopes that the various centers, under the central coordination of the Institute, will communicate with each other, share information, and possibly exchange training and demonstration materials. The Committee also believes that the Institute and the centers should consider innovative ways to share information with small and medium-sized manufacturers, possibly including televised short courses on automated manufacturing.

The Committee intends that a wide range of nonprofit groups be eligible to apply for a center award, including, but not limited to, State agencies, nonprofit consortia created by companies, universities, two-year colleges, community development corporations, and nonprofit research institutes. An existing nonprofit operation, such as a manufacturing center at a university or State agency, also would be eligible to apply for an award, although it too would have to meet the objectives and specifications set forth in this section.

The section sets forth three criteria to guide the Secretary's selection of centers: the merits of the application, geographical diversity, and the percentage of funding from other sources. The Secretary has the discretion with respect to whether to use merit review, peer review, or some other similar process to evaluate the merits of applications. The Committee defines "geographical diversity" as meaning that centers should be distributed around the United States, so as to reach a wide range of small and medium-sized manufacturers, providing that meritorious applications are received from around the Nation. While the Committee intends wide geographical distribution, it also intends that centers be established primarily in areas of the United States with large numbers of small and medium-sized manufacturing firms.

The Committee intends that the percentage of funding offered by particular applicants be considered in deciding which applications be selected. However, in reviewing the funding aspect the Secretary should consider the relative ability of applicants to pay a percentage of center costs above 50 percent. As a hypothetical example, if two proposals of equal merit are received and the Secretary judges that both applicants have a roughly equal ability to contribute financially but one applicant proposes to pay for 75 percent of their center's total cost and the other proposes to pay for 50 percent, the Secretary may give preference to the applicant who has offered the highest percentage. However, the Committee does not intend that a less affluent applicant, or an applicant from a less affluent State, be eliminated from consideration because it believes it cannot contribute more than 50 percent of center costs.

Once the Secretary makes an award to a particular applicant, that applicant shall not be entitled to receive more than the Feder-

al funds agreed to at the time the award is made. As a hypothetical example, if an applicant proposes to pay for 60 percent of a center's planned total cost during the duration of Federal support, and the Secretary agrees to this formula, the resulting center is not entitled to change that formula and expect that its share can drop to 50 percent. Moreover, if a center proposes the purchase of additional equipment not authorized in the original contract, then the Secretary may amend the contract with that center if the Secretary feels that a compelling reason to do so exists; but the Secretary is under no obligation to do so.

Once a center is established, the center's executives shall be responsible for day-to-day management of the center. However, center directors shall operate within such auditing, program, and other guidelines as the Secretary may deem appropriate. The Committee intends that each center will maintain close communication and cooperation with the National Institute of Technology.

The Committee intends that centers be allowed to charge nominal fees for their services, such as short training courses, under such guidelines as the Secretary may set. However, the Committee does not want fees set in such a way as to deter business people from seeking center assistance. Fees are not to be used as the primary way to raise revenue for a center. Any revenue raised from fees during a given fiscal year shall be applied towards center costs, and the Federal and non-Federal funding obligations for that given year shall be lowered by the same amount, and according to the percentage of Federal versus non-Federal funding agreed to at the time the Secretary made an award to that center.

The section requires that each center be evaluated during its third year of operation. The Committee intends that each such evaluation be rigorous. If a center is not performing at a satisfactory level of performance, the Secretary is directed to cut off funding at the end of the third year.

The Committee intends that all Commerce Department support to a center end after six years. A part of the contract made between the Secretary and a given center at the time the initial award is made, the Secretary may provide that the percentage of Commerce Department funding decline during the last years of Department support. The Committee intends that at the end of the sixth year, or the end of the third year in the case of a center with unsatisfactory performance, all equipment and facilities associated with the center shall become the property of the institution or group which legally controls that center, except that the Secretary may provide in advance that certain equipment shall be returned to the Department of Commerce at the time Departmental support for the Center ends.

One part of this section says that the provisions of chapter 18 of title 35, United States Code, shall (to the extent not inconsistent with this section) apply to the promotion of technology from research by centers under this section. This provision refers to language added to chapter 18 by the Patent and Trademark Amendments of 1980 (P.L. 96-517). Under these amendments, nonprofit organizations and small businesses are entitled, subject to certain conditions, to keep the legal rights to inventions which may result from Federal-funded research. The rationale is to provide an incen-

tive for these nonprofit organizations and small businesses to commercialize these inventions and benefit the economy. Since only nonprofit organizations are eligible to apply for centers, making these centers themselves nonprofits, this provision simply confirms that chapter 18 applies to the centers.

New section 24 ("Pilot State Technology Extension Program") establishes a three-year grant program to support pilot projects at the State level to demonstrate innovative methods by which the Federal Government and the States can work together, particularly in the transfer of Federally-funded research, technology, and expertise. $2,000,000 per year is authorized for fiscal years 1988, 1989, and 1990.

The section sets several conditions on the purposes for which grants made under this program shall be used.

The Committee intends that pilot projects funded under this program emphasize new ways of improving the transfer of Federal technology through the States to U.S. businesses. The Committee hopes that special attention will be given to innovative ways in which Federal laboratories, State agencies, and business and professional groups can work together.

The Committee intends that in carrying out this program the Office of Extension Services will coordinate closely with, and draw upon the expertise of, the Federal Laboratory Consortium for Technology Transfer.

SECTION 202

This section amends the Stevenson-Wydler Technology Innovation Act of 1980 to create a new section 6 ("Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation"). The new section 6 establishes within the Office of the Secretary of Commerce a Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation to serve as a central repository of information on State and local technology initiatives. Title V of the bill authorizes $1,000,000 for fiscal year 1988, $1,500,000 for fiscal year 1989, and $2,000,000 for fiscal year 1990.

The Committee finds that State and local governments are undertaking imaginative and important initiatives, often in partnership with private businesses and nonprofit organizations, to stimulate productivity, technology, and innovation. The Committee believes that there is a need for a Clearinghouse in the Federal Government to provide information on these initiatives to the various States, to interested Federal agencies, and to other interested parties. The primary purpose of the Clearinghouse is to assist State and local government agencies to learn from the creative initiatives of other State and local governments. In addition, information on these initiatives can help ensure that Federal programs complement, rather than hinder or unnecessarily duplicate, State and local efforts.

The Clearinghouse should work closely with and not duplicate the efforts of regional and multistate organizations, including organizations such as the National Governors Association and the Council of State Governments, both of which collect some information on State and local initiatives.

As part of its activities, the Clearinghouse should collect and disseminate information on Federal programs, including those of the Department of Commerce, which provide financial and other assistance to State and local initiatives on productivity, technology, and innovation. However, the Clearinghouse shall not assist State and local governments to apply for Federal financial support.

In establishing the Clearinghouse in the Office of the Secretary of Commerce, the Committee expects that the Clearinghouse will take a broad perspective on State and local initiatives. The Clearinghouse should not emphasize one type of productivity initiative over another; it should have just as much interest in initiatives which involve entrepreneurship as in initiatives which involve technology.

While the section leaves to the Secretary the discretion to choose exactly where in the Office of the Secretary to place the Clearinghouse, the Committee believes that the Office of the Assistant Secretary for Congressional and Intergovernmental Affairs is an appropriate home for the Clearinghouse and urges the Secretary to consider locating it there.

In placing the Clearinghouse in the Office of the Secretary, the Committee expects the Clearinghouse to coordinate closely with, and provide information to, the full range of Commerce Department agencies. In particular, the Committee expects that the Clearinghouse will work closely with the Office of Productivity, Technology, and Innovation, the National Institute of Technology, and other parts of the Department which work directly with the States.

The Clearinghouse is directed to evaluate which types of State and local initiatives are most effective in enhancing the competitiveness of American businesses, but it may do so only when requested to do so by the State and local agencies undertaking these initiatives. It would be acceptable for the Clearinghouse to provide only detailed descriptions of the initiatives and to cite available evidence of their effectiveness. However, the Clearinghouse may enter into contracts to assist State and local governments and regional and multistate organizations of such governments to evaluate initiatives.

The Committee intends that the Clearinghouse, in carrying out its responsibilities, will not focus on State and local government initiatives to stimulate economic development through the conducts of public works or the repair or replacement of infrastructure and shall not encourage a private business to locate any facility in any given State or local jurisdiction or to relocate any facility. Nor shall the Clearinghouse consider any issue included in a specific labor-management agreement without the consent and cooperation of all parties of the agreement.

TITLE III—ADVANCED TECHNOLOGY PROGRAM

SECTION 301

This section amends the Stevenson-Wydler Technology Innovation Act of 1980 by adding a new section 7, entitled "Advanced Technology Program." The Secretary, through the Director of the National Institute of Technology and with the advice of the Assistant Secretary for Productivity, Technology, and Innovation, shall

establish an Advanced Technology Program for the purpose of assisting United States industry to create generic technology for commercialization and manufacturing. The Secretary is authorized to enter into contracts with small businesses and to aid the creation of joint research and development ventures, subject to limitations specified in the section.

In the view of the Committee, the purpose of the program is to encourage the U.S. private sector to take additional steps to develop the generic technology necessary to ensure U.S. leadership both in manufacturing and in the commercialization of new scientific discoveries and technical innovations.

The Committee defines "generic research" as research aimed at the solution of general problems that are associated with the use of a technology by industry and "generic technology," as prototype processes and products which result from this research. Generic research can be viewed as bridging the gap between basic science done mostly in universities and applied research and development by companies to develop proprietary products.

The Committee approves of public support of both university basic research and the Institute's generic research, since both activities ultimately contribute to the public good and because they are high risk and too expensive for many individual firms. Cooperative research between companies and Federal laboratories such as the Institute also can create such technology; such cooperation is permitted under the Federal Technology Transfer Act of 1986 (P.L. 99-502).

However, industry itself also can make important contributions to the development of generic technology, either through research at an individual company or through multi-company research consortia known as joint research and development ventures. Joint research ventures are permitted under the National Cooperative Research Act of 1984 (P.L. 98-462). Collaborative research under that Act can be an effective way for U.S. companies to pool their research dollars in order to improve their competitive position relative to companies in other countries.

The Committee intends that the Advanced Technology Program encourage and, under certain conditions, assist industry-based efforts to improve the Nation's generic technology.

The Committee intends that the Secretary's primary activity under the Advanced Technology Program will not be financial assistance but rather the role of a catalyst to encourage private companies to conduct economically generic research and, when appropriate, to form joint research and development ventures under the provisions of the National Cooperative Research Act. The Committee notes that one of the most valuable features of government technology efforts in other countries, notably Japan, is to bring industry leaders together for discussions of national technological needs and opportunities.

As part of the Secretary's efforts to encourage greater industrial investment in generic research, the Committee expects that part of whatever funds may be appropriated for this program shall be used to help pay for conferences, workshops, and other forms of meetings, as well as for expert reviews of U.S. technology needs and opportunities.

Under the provisions of this section, the Secretary also may enter into contracts with small businesses and may provide "seed money" to encourage the formation of joint research and development ventures. The Committee does not intend, however, that any contract or award made under this program be a substitute for research investments which would otherwise be made by private U.S. firms. The objective is to use Federal funds to assist industry to perform research that they would otherwise be unable or unwilling to conduct but which is in the long-term economic interest of the Nation.

The Small Business Innovation Research Program (SBIR) has shown that small businesses often conduct excellent generic research which benefits not only the company but also the Nation. However, existing SBIR programs run by Federal mission agencies naturally focus on research relevant to those missions. Nowhere in the Federal Government is there an SBIR-type program which has the authority and flexibility to fund, on a highly selective basis, small business research of extraordinary economic and commercial value. The Committee believes that the Secretary of Commerce should have that authority. The section allows the Secretary, at the Secretary's discretion, to contract with small businesses which may be able to conduct generic research in areas of great commercial importance.

A policy to use Federal "seed money" to encourage joint research ventures is not unprecedented. President Reagan, in his December 16, 1986, statement on the machine tool industry, announced that the Defense Department will provide up to $5 million per year over the next three years in matching funds to support the industry's proposed joint research venture, the National Center for Manufacturing Sciences. The proposed Center will conduct advanced manufacturing technology research and share the results of its research with member companies.

The Committee is aware of the difficulty involved in deciding which areas of technology should receive these two types of assistance and which should not. In order to guide the Secretary in making such decisions, the section contains several principles and limitations, as follows.

First, the program is to focus on research to create the generic technology necessary for rapid commercialization or advanced manufacturing. No money under the program is to be used to help companies develop proprietary products or the marketplace. Second, the Secretary shall give preference to those discoveries and technologies which have both great economic potential and which have received special attention in other countries. Third, no contract with a small business or award to a joint venture may be made until the research project in question has been subject to a merit review, peer review, or some similar procedure; this step ensures that funded projects have true scientific and technical merit.

Fourth, the Committee does not believe that the Commerce Department should make awards to all proposed or existing joint research ventures. Some 60 such ventures have already formed with exclusively private money. However, there are cases in which an industry will not form such a venture on its own, even if it badly needs to create and disseminate new generic technology. Therefore,

the bill states that the secretary shall not make an award unless, in the judgment of the Secretary, the inudstry in question is so fragmented or financially pressed as to be unlikely to form a research venture on its own or to form a research venture quickly.

The Committee sees two principal situations in which these conditions might arise. The first is in the case of a traditional basic industry; machine tools, as mentioned above, is one such industry which has received Presidential attention. These industries are often fragmented, or financially hard-pressed, or both. In such a situation, a small amount of Federal money can help draw private money that would not otherwise be forthcoming. The second situation arises with a new scientific discovery of great future economic important but with no immediate applications. In this situation, companies by themselves may be reluctant to form a joint research venture, even though such a venture may be in the long-term national interest. Superconducting materials may become an example.

While the Secretary may initiate discussions about these matters, the Committee anticipates that in most cases industries themselves will initiate the discussions, meaning that the initiative will come from the private sector.

Fifth, the bill directs the Secretary to establish procedures for financial reporting and auditing, as well as ensuring that research results from federally-assisted efforts receive wide dissemination.

Finally, the bill authorizes the Secretary and the Director of the National Institute of Technology to create such advisory mechanisms as they consider appropriate. Because the Committee does not want to create a highly bureaucratic program, the legislation does not create a "technology board." However, the Committee encourages the Secretary and the Director to seek the advice and counsel of industry leaders and technology experts.

TITLE IV—REPORTS ON SEMICONDUCTORS, SUPERCONDUCTORS, AND ADVANCED MANUFACTURING TECHNOLOGY

SECTION 401

This section directs the President, at the time of submission of the fiscal year 1989 budget request, also to submit to the Congress a report on the President's policies and budget proposals regarding semiconductors and semiconductor manufacturing technology, fiber optics and optical-electronic technology generally, superconducting materials, and advanced manufacturing technologies. The Committee would like information on both defense and civilian Federal Efforts in these areas.

The Committee does not intend that this report be long or that its preparation be burdensome. The goal is to obtain an official overview, for the record, of Federal spending in these important areas of technology and a summary of the President's policies regarding them. The Committee is particularly interested in Federal civilian research programs and the extent to which they assist U.S. industrial competitiveness. In the case of fiber optics, the Committee also wants a summary of the Administration's responses, if any, to the issues raised in the Department of Commerce report en-

titled "A Competitive Assessment of the U.S. Fiber Optics Industry."

Federal research efforts in technical areas such as these are frequently dispersed throughout a wide range of departments and agencies, and information on total spending and overall program direction is often difficult to obtain. Because the Committee intends to review technology needs and opportunities in these particular areas, especially as they relate to U.S. industrial competitiveness, it believes that a report accompanying the fiscal year 1989 budget request would be particularly timely.

SECTION 402

This section directs the Secretary of Commerce to enter into contracts with the National Academies of Engineering and Sciences for a thorough review of all major policy issues regarding the United States semiconductor industry. Related technologies, including optical-electronics, are also to be studied.

The Semiconductor Industry Association has proposed a large $1.5 billion research effort, called the Semiconductor Manufacturing Technology Project ("SEMATECH"). The importance of this industry, combined with the long-term and complex issues associated with it, has led the Committee to believe that an in-depth study by the Academies would be helpful to Congress. Attention to related technologies, including but not limited to optical-electronics, would also be very useful.

To the extent permitted by the procedures and practices of the Academies, the Committee encourages the Academies and the Secretary to use the study and its various sessions as a forum for policy discussions among industry leaders, technology experts, and officials of the Federal Government. The Committee understands that Federal officials rarely sit on Academy panels as formal members, but encourages as much informal discussion as possible.

This section designates the Secretary of Commerce to be the individual who contracts with the Academies for this study. However, the Committee does not believe that the Department of Commerce alone should pay for this study. The Secretary is encouraged to work with the Academies to seek funds both from other Federal departments and from private industry to pay for the project. The Committee particularly encourages the Secretary to approach the Semiconductor Industry Association and the Semiconductor Research Corporation for funds.

SECTION 403

This section directs the Secretary of Commerce to enter into contracts with the National Academies of Engineering and Sciences for a thorough review of all major policy issues regarding U.S. commercial and national defense applications of superconductors.

The Committee is deeply concerned that the United States may not have a coherent national strategy for speeding the commercialization of these revolutionary new materials. To the extent permitted by the procedures and practices of the Academies, the Committee encourages the Academies and the Secretary to use the study and its various sessions as a forum for policy discussions among in-

dustry leaders, technology experts, and officials of the Federal Government. The Committee would particularly welcome a discussion of the research needed to overcome scientific and technical barriers to the successful commercialization of superconductors, as well as ways to avoid unnecessary research duplication among Federal agencies and between the Federal Government and the private sector.

The Committee intends that the Academies address the specific topics listed in the bill but that they have wide latitude in how they organize their final report.

The Committee encourages the Secretary and the Academies to maintain close communications on superconductor issues with other Federal departments and agencies.

As with the semiconductor study called for in section 402, the Committee encourages the Secretary and the Academies to seek funding for the superconductor study from other Federal agencies and from the private sector.

TITLE V—AUTHORIZATION OF APPROPRIATIONS

SECTION 501

This section amends the 1901 NBS Act to create a new section 25 ("Authorization of Appropriations") which authorizes appropriations totaling $166,000,000 for the National Institute of Technology in fiscal year 1988. The section also allows transfers among line items to be made; allows the Secretary to accept contributions for the Cold Neutron Source Facility; and authorizes appropriations for such sums as may be necessary to make any adjustments in salary, pay, retirement, and other employee benefits which may be provided by law.

SECTION 502

Subsection (a) amends the Stevenson-Wydler Technology Innovation Act of 1980 to authorize fiscal year 1988 appropriations of $2,400,000 for the Office of Productivity, Technology, and Innovation, $2,000,000 for carrying out the Japanese Technical Literature Act, and $500,000 for patent licensing activities in the National Technical Information Service. Subsection (b) authorizes appropriations for the Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation at $1,000,000 for fiscal year 1988, $1,500,000 for fiscal year 1989, and $2,000,000 for fiscal year 1990. Subsection (c) authorizes fiscal year 1988 appropriations of $15,000,000 for the new Advanced Technology Program.

TITLE VI—MISCELLANEOUS AMENDMENTS

SECTION 601

This section establishes an Office of Barter and Countertrade within the Department of Commerce to ensure that options for barter and countertrade are explored. The Secretary of Commerce will appoint a Director and provide the necessary staff. The major functions of the Office are to gather information on barter and

countertrade and disseminate that information to interested federal agencies and businesses.

SECTION 602

Section 602(a) would amend section 2(b)(2) of the International Air Transportation Fair Competitive Practices Act of 1974 (hereinafter referred to as "the Act") to shorten the timeframe under which the Secretary of Transportation must take action in response to a complaint made related to unjustifiable or unreasonable discriminatory, predatory, or anticompetitive practices of foreign governments from 180 days to 90 days of the receipt of such complaint.

Subsection (b) would amend section 2(b) of the Act to require the Secretary of Transportation to solicit the views of the Department of Commerce and the Office of the U.S. Trade Representative, in addition to the Department of State, as is required under current law, in considering any complaint. It also requires that any affected air carrier or foreign air carrier be provided with reasonable notice and opportunity to file written evidence and argument, as is consistent with acting on such complaint.

Subsection (c) amends section 2 of the Act by adding a new requirement that not later than 120 days after receiving a complaint under this section, the Secretary of Transportation shall report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Public Works and Transportation of the House of Representatives on actions that have been taken with respect to such complaint, unless it is withdrawn prior to the date upon which the report is required to be submitted.

In an effort to provide fair and equal treatment for U.S. carriers operating abroad, the International Air Transportation Fair Competitive Practices Act, as amended, provides a complaint mechanism to redress unfair, discriminatory trade practices. This section amends that process by (1) reducing the time complaining carriers may be exposed to retaliatory action by foreign governments, (2) broadening the consideration of such a complaint to include agencies with jurisdiction over international trade matters, and (3) permitting Congress to review the actions taken by the Department of Transportation. It is the Committee's intent that this amended mechanism help the Federal Government ensure that U.S. carriers are able to exercise the full rights negotiated for them under the civil aviation bilateral agreements.

SECTION 603

Subsection (a) of this section provides that the Secretary of Commerce may, upon the request of the head of any Executive department, the Attorney General, or the U.S. Trade Representative, or upon the Secretary's own initiative, immediately make an appropriate investigation to determine the effects on national security or essential commerce which affects national security of mergers, acquisitions, and takeovers commenced or made on or after June 4, 1987, by or with foreign persons which involve persons engaged in interstate commerce.

The Committee intends the term "foreign person" to include any individual who is not a citizen under the laws of the United States. The term also includes an entity having its principal place of business in a country other than the United States. It would also include any foreign person who acquires a domestic corporation merely for the purpose of acquiring control over another domestic corporation in contravention of the purposes of this section.

The Committee in no way intends to impose barriers to foreign investment. The Committee intends for this section to affect only inward foreign investment, i.e., overseas investment flowing into the United States. This section is not intended to initiate investigations on non-controlling foreign investments nor to have any effect on transactions which are clearly outside the realm of national security.

The standard for review in this section is "national security or essential commerce which affects national security." That standard is considerably narrower than the existing standard for review under the Executive Order which established the Committee on Foreign Investment in the United States (CFIUS) which is "major implications for the Uited States national interest." If a merger would not be reviewed under the CFIUS standard, it is unlikely to be reviewed under the standards of this legislation.

Subsection (b) provides that during such investigation, the Secretary shall be provided with all relevant information by the parties involved in any transactions subject to this section and shall seek information and advice from, and shall consult with, the Secretary of Defense and other appropriate officers of the United States.

It protects confidential information filed with the Secretary of Commerce pursuant to this section.

It allows the Secretary, after reasonable notice, to hold public hearings, afford interested parties an opportunity to present information and advice relevant to such investigation, and to apply in the district courts of the United States for necessary injunctive relief and compliance orders in order to conduct the investigation and prevent violations of this section.

Subsection (c) provides that the Secretary shall report to the President within 45 days after beginning an investigation. The findings of such investigation and based on such findings, the recommendations of the Secretary for action or inaction.

Subsection (d) provides that subject to the provisions of subsection (f) of this section, the President may take such action for such time as the President considers appropriate to restrict, suspend, or prohibit such acquisition, merger, takeover or other attempt to gain control of a person engaged in interstate commerce in the United States so that such control will not threaten to impair the national security or essential commerce which affects national security of the United States. The President is encouraged to specify procedures which the President will follow in considering any report received from the Secretary pursuant to subsection (c) of this section. Such procedures should reflect that successful commerce depends on a prompt response to any report. The Committee has not placed any time constraints on the President's decision to restrict, suspend, or prohibit a transaction. The Committee believes the President should have broad discretion in this respect. Howev-

er, the Committee anticipates that the President's consideration should not cause undue or unnecessary delay so as to impede transactions simply because of uncertainty.

The President may seek appropriate relief in the district courts of the United States, in order to implement and enforce the provisions of this section. The term "appropriate relief" is intended as a broad term to give the President the flexibility to deal with any control attempt which he deems a threat to national security. Such "appropriate relief" includes broad injunctive and equitable relief, such as a prohibition on further stock purchases, the court-ordered divestiture of all or part of the acquired stock, imposition of civil penalties, and forefeiture of profits if needed to implement and enforce the statute. The Committee notes that takeover efforts can proceed so quickly that the President does need a broad range of remedies in order to respond appropriately to different facts and circumstances.

Subsection (e) provides that the Secretary and the President shall, take into account the requirement of national security and essential commerce which affects national security, consider domestic production needed for projected national defense requirements; the capacity of domestic industries to meet national defense requirements, including the availability of human resources, products, technology, raw materials, and other supplies and services; and the control of such industries by foreign citizens as it affects such industries and the capacity of the United States to meet the requirements of national security or essential commerce which affects national security.

Subsection (f) provides that if the President determines to take action under subsection (d) of this section, the President shall immediately transmit to the Secretary of the Senate and the Clerk of the House of Representatives a report of the action which the President intends to take under this section together with the investigative report prepared by the Secretary. The President shall commence action in accordance with such report, unless the Congress enacts a joint resolution disapproving such action within 15 calendar days after the date of receipt of such report.

Subsection (g) provides that the Secretary may issue regulations to carry out the provisions of this section. In issuing such regulations, the Secretary shall attempt to minimize paperwork burdens and shall, to the extent possible, coordinate reporting requirements under this section with other reporting requirements under Federal law.

The Committee encourages the Secretary to minimize paper work and reporting burdens and to coordinate any reporting during an investigation with existing law. By doing so, the Committee intends to provide the Secretary with the flexibility to determine how best to implement the provisions of this section. The Secretary is encouraged to provide a high degree of certainty in the marketplace for those engaged in transactions potentially affected by the Act. In that regard, the Secretary is encouraged to propose regulations which delineate a beginning and ending point to the time in which a transaction could be held up for review. The Secretary is encouraged to consider other measures to improve marketplace certainty. For example, the Secretary may wish to link the

timing of any investigation to Hart-Scott-Rodino timetables, establish a clearance list of industries which would not be subject to investigation, or create an optional pre-clearance procedure.

Subsection (h) provides that the powers under this section are in addition to existing law and do not replace, repeal, or otherwise prejudice existing law.

Subsection (i) provides that if one section of the bill is successfully challenged in court, the remaining sections will remain in effect.

TITLE VII—CONFORMING AND FURTHER MISCELLANEOUS AMENDMENTS

SECTION 701

This section adds a new section 26 of the 1901 Act ("Savings Provision") which continues existing National Bureau of Standards rules and regulations, determinations, standards, contracts, certifications, authorizations, delegations, and other actions not suspended by the Secretary or others.

SECTION 702

Section 702 makes minor conforming amendments in the Stevenson-Wydler Technology Act of 1980, all of which bring terms in that Act into conformity with the new terms in this Act.

SECTION 703

Subsection (a) directs the Institute not to charge fees to research associates at the Institute in the absence of express statutory authority to do so. The Committee believes that new fees may be inappropriate, since companies already pay the salaries and expenses of research associates working in the Institute. If the Department of Commerce believes that fees should be charged, then the Committee requests that the Department submit, in writing, a detailed explanation and rationale for this position by December 31, 1987.

Subsection (b) directs the Institute's Board of Assessment to assess emerging technologies which are expected to require research by the Institute. As the pace of technological innovation increases, and international competition also increases, the Committee believes that the Institute would benefit from annual statements from the Board of Assessment on emerging technologies which these experts believe the Institute should consider.

Subsection (c) requires the Director to prepare a plan detailing how the Institute will make small businesses more aware of the Institute's activities and research; the plan shall be submitted to House and Senate authorizing committees. The Bureau of Standards traditionally has worked primarily with larger companies, given the nature of its research. However, the Committee believes that the Institute should explore ways it can make its research and technical services more useful to U.S. small businesses.

Subsection (d) directs that none of the activities or functions of the National Technical Information Service which are not currently performed by contractors shall be contracted out unless such transfer is expressly authorized by statute, and directs that the

Secretary shall submit recommendations concerning NTIS to House and Senate authorizing committees by December 31, 1987.

The Administration has proposed turning the operations of the National Technical Information Service over to either a private contractor or an employee-owned organization. At the Science Subcommittee's March 17, 1987, hearing on Commerce Department technology programs, subcommittee chairman Riegle asked Department officials for a written response to his question about the rationale for this proposed privatization. The Committee has yet to receive an answer. Under these circumstances, the Committee believes it appropriate to prohibit the privatization of NTIS unless such transfer is expressly authorized by statute, while again providing the Secretary of Commerce with an opportunity to submit written recommendations on the matter.

Subsection (e) establishes a Commerce Department Commerce, Science, and Technology Fellowship Program. The Commerce Department historically has maintained a program by which Department employees could spend a one-year fellowship working in Congressional offices. The Committee believes that both Congress and the fellows benefit from such an arrangement. Therefore, the Committee believes that the program should be established formally.

Rollcall Votes in Committee

In accordance with paragraph 7(c) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following record votes during its consideration of S. 907:

On motion to report the bill with an amendment in the nature of a substitute:

YEAS—20	NAYS—0
Mr. Hollings	
Mr. Inouye	
Mr. Ford	
Mr. Riegle [1]	
Mr. Exon	
Mr. Gore [1]	
Mr. Rockefeller	
Mr. Bentsen	
Mr. Kerry [1]	
Mr. Breaux	
Mr. Adams [1]	
Mr. Danforth	
Mr. Packwood	
Mrs. Kassebaum [1]	
Mr. Pressler [1]	
Mr. Stevens [1]	
Mr. Kasten [1]	
Mr. Trible [1]	
Mr. Wilson	
Mr. McCain	

[1] By proxy.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

THE ACT OF MARCH 3, 1901

Section 1 of that Act

[BUREAU ESTABLISHED

[SECTION 1. The Office of Standard Weights and Measures shall be known as the National Bureau of Standards.]

FINDINGS AND PURPOSES

SECTION 1. (a) The Congress finds and declares that—

(1) United States economic growth and industrial competitiveness require continual improvements in manufacturing technology, quality control, and techniques for ensuring product reliability and cost-effectiveness;

(2) improvements in manufacturing and product technology depend on fundamental scientific and engineering research, in cooperation with industry, to develop (A) the precise an accurate measurement methods and measurement standards needed to improve quality and reliability, and (B) new technological processes by which such improved methods may be used in practice to improve manufacturing and to assist industry to transfer important laboratory discoveries into commercial products;

(3) industrial competitiveness, scientific progress, public safety, and product compatibility and standardization also depend on the development of precise measurement methods, standards, and related basic technologies;

(4) because no one manufacturer or group of manufacturers is able to provide these essential technical services, the Federal Government should maintain a national science, engineering, and technology laboratory which provides methods, measurement standards, and associated technologies and which works with United States companies to use new technologies to improve products and manufacturing processes; and

(5) such national laboratory also should serve as a clearinghouse to assist trade associations, State technology programs, labor organizations, professional societies, and educational institutions to disseminate information on new basic technologies, including automated manufacturing processes, to interested large and small industrial companies which face strong competition from foreign sources.

(b) It is the purpose of this Act to redesignate the National Bureau of Standards as the National Institute of Technology and to enhance its capabilities to serve as the lead national laboratory for the development and provision of the measurement and technological services essential for such concerns as scientific, engineering, and technological progress, United States industrial competitive-

ness, improved product reliability and manufacturing processes, and public safety.

Section 2 of that Act

[FUNCTIONS OF THE SECRETARY

[SEC. 2. The Secretary of Commerce (hereinafter referred to as the "Secretary") is authorized to undertake the following functions:

[(a) The custody, maintenance, and development of the national standards of measurement, and the provision of means and methods for making measurements consistent with those standards, including the comparison of standards used in scientific investigations, engineering, manufacturing, commerce, and educational institutions with the standards adopted or recognized by the Government.

[(b) The determination of physical constants and properties of materials when such data are of great importance to scientific or manufacturing interests and are not to be obtained of sufficient accuracy elsewhere.

[(c) The development of methods for testing materials, mechanisms, and structures, and the testing of materials, supplies, and equipment, including items purchased for use of Government departments and independent establishments.

[(d) Cooperation with other governmental agencies, and with private organizations in the establishment of standard practices, incorporated in codes and specifications.

[(e) Advisory service to Government agencies on scientific and technical problems.

[(f) Invention and development of devices to serve special needs of the Government.

In carrying out the functions enumerated in this section, the Secretary is authorized to undertake the following activities and similar ones for which need may arise in the operations of Government agencies, scientific institutions, and industrial enterprises:

[(1) the construction of physical standards;

[(2) the testing, calibration, and certification of standards and standard measuring apparatus;

[(3) the study and improvement of instruments and methods of measurements;

[(4) the investigation and testing of railroad track scales, elevator scales, and other scales used in weighing commodities for interstate shipment;

[(5) cooperation with the States in securing uniformity in weights and measures laws and methods of inspection;

[(6) the preparation and distribution of standard samples such as those used in checking chemical analyses, temperature, color, viscosity, heat of combustion, and other basic properties of materials; also the preparation and sale or other distribution of standard instruments, apparatus and materials for calibration of measuring equipment;

[(7) the development of methods of chemical analysis and synthesis of materials, and the investigation of the properties of rare substances;

[(8) the study of methods of producing and of measuring high and low temperatures; and the behavior of materials at high and low temperatures;

[(9) the investigation of radiation, radioactive substances, and X-rays, their uses, and means of protection of persons from their harmful effects;

[(10) the study of the atomic and molecular structure of the chemical elements, with particular reference to the characteristics of the spectra emitted, the use of spectral observations in determining chemical composition of materials, and the relation of molecular structure to the practical usefulness of materials;

[(11) the broadcasting of radio signals of standard frequency;

[(12) the investigation of the conditions which affect the transmission of radio waves from their source to a receiver;

[(13) the compilation and distribution of information on such transmission of radio waves as a basis for choice of frequencies to be used in radio operations;

[(14) the study of new technical processes and methods of fabrication of materials in which the Government has a special interest; also the study of methods of measurement and technical processes used in the manufacture of optical glass and pottery, brick, tile, terra cotta, and other clay products;

[(15) the determination of properties of building materials and structural elements, and encouragement of their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;

[(16) metallurgical research, including study of alloy steels and light metal alloys; investigation of foundry practice, casting, rolling, and forging; prevention of corrosion of metals and alloys; behavior of bearing metals; and development of standards for metals and sands;

[(17) the operation of a laboratory of applied mathematics;

[(18) the prosecution of such research in engineering, methematics, and the physical sciences as may be necessary to obtain basic data pertinent to the functions specified herein; and

[(19) the compilation and publication of general scientific and technical data resulting from the performance of the functions specified herein or from other sources when such data are of importance to scientific or manufacturing interests or to the general public, and are not available elsewhere, including demonstration of the results of the Bureau's work by exhibits or otherwise as may be deemed most effective, and including the use of National Bureau of Standards scientific or technical personnel for part-time or intermittent teaching and training activities at educational institutions of higher learning as part of and incidental to their official duties and without additional compensation other than that provided by law.]

ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES

SEC. 2 (a) There is established within the Department of Commerce a science, engineering, and technology laboratory to be known at the National Institute of Technology (hereinafter referred to as the "Institute".)

(b) The Secretary of Commerce (hereinafter referred to as the "Secretary") is authorized to take all actions necessary and appropriate to accomplish the purpose of this Act, including actions to—

(1) develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for making measurements consistent with those standards, including comparing standards used in scientific investigations, engineering, industry, commerce, and educational institutions with the standards adopted or recognized by the Federal Government, State or local governments, or foreign governments;

(2) contribute to United States industrial capacity by conducting research and cooperating with industry to develop the measurements, measurement methods, and basic technology needed to improve quality control, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate the more rapid commercialization of products based on new scientific discoveries in fields such as automation, computers, advanced materials, biotechnology, and optical technologies;

(3) determine, compile, evaluate, and disseminate physical constants and the properties and performance of conventional and advanced materials when they are important to science, engineering, technology, education, commerce, and industry and are not available with sufficient accuracy elsewhere;

(4) develop the means and methods for testing materials, mechanisms, structures equipment, and systems, including those purchased for the use of the Federal Government, and the testing thereof;

(5) assure the compatibility of United States national standards with those of other nations;

(6) cooperate with other departments and agencies of the Federal Government, State and local government, industry, and private organizations in establishing standard practices, incorporated in codes, specifications and voluntary consensus standards;

(7) represent the United States internationally, in coordination with the Department of State, in defining the primary units of measurement, and in establishing and maintaining international standards of measurement and criteria for standards certification and laboratory accreditation;

(8) advise government and industry on scientific and technical problems;

(9) invent, develop, and (when appropriate) promote transfer to the private sector of devices to serve special national needs; and

(10) assist interested trade associations, State technology agencies, labor organizations, professional societies, and educational institutions to disseminate information on new basic product

and process technologies, particularly automated manufacturing technologies, to interested medium-sized and small companies throughout the United States.

(c) In carrying out the functions specified in subsection (b) of this section, the Secretary may, among other things—

(1) construct physical standards;

(2) test, calibrate, and certify standards and standard measuring apparatus;

(3) study and improve instruments, measurement methods, and industrial quality control and quality assurance techniques;

(4) cooperate with the States in securing uniformity in weights and measures laws and methods of inspection;

(5) prepare, certify, and sell, in accordance with the Standard Reference Data Act (15 U.S.C. 290 et seq.), standard reference materials for use in ensuring the accuracy of chemical analyses and measurements of physical and other properties of materials;

(6) accept research associates, donations, and donated equipment from industry;

(7) engage with industry in research to develop new basic and generic technologies for traditional and new products and for improved production and manufacturing;

(8) study and develop fundamental scientific understanding and improved measurement methods for chemical substances and compounds, traditional and advanced materials, ionizing and nonionizing radiation, radio waves and signals, and electromagnetic signals;

(9) broadcast radio signals of standard time and frequency;

(10) conduct research on all of the telecommunications sciences, including wave propagation and reception, the conditions which affect electromagnetic wave propagation and reception, electromagnetic noise and interference, radio system characteristics, operating techniques affecting the use of the electromagnetic spectrum, and methods for improving the use of the electromagnetic spectrum for telecommunications purposes;

(11) prepare and issue predictions of electromagnetic wave propagation conditions and warnings of disturbances in such conditions;

(12) develop and test standard interfaces, communication protocols, and data structures for computer, automation, and telecommunications systems;

(13) perform research to develop standards and test methods to advance the effective use of computers and related systems and to protect the information stored, processed, and transmitted by such systems;

(14) determine properties of building materials and structural elements, and encourage their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;

(15) undertake such research in engineering, mathematics, computer science, materials science, and the physical sciences as

may be necessary to carry out and support the functions specified in this section;

(16) compile, evaluate, publish and otherwise disseminate general scientific and technical data resulting from the performance of the functions specified in this section or from other sources when such data are important to science, engineering, or industry, or to the general public, and are not available elsewhere;

(17) provide technical evaluations and assistance, when appropriate, to individuals and small companies who submit promising inventions and other novel technical concepts which may have significant commercial promise;

(18) demonstrate the results of the Institute's activities by exhibits or otherwise as may be deemed most effective, and including the use of scientific or technical personnel of the Institute for part-time or intermittent teaching and training activities at educational institutions of higher learning as part of and incidental to their official duties and without additional Federal compensation other than compensation provided by law; and

(19) undertake such other activities similar to those specified in this subsection as the Secretary determines appropriate.

Section 3 of that Act

FUNCTIONS; FOR WHOM EXERCISED

SEC. 3. The [Bureau] *Institute* is authorized to exercise its functions for the Government of the United States and for international organizations of which the United States is a member; for governments of friendly countries; for any State or municipal government within the United States; or for any scientific society, educational institution, firm, corporation, or individual within the United States or friendly countries engaged in manufacturing or other pursuits requiring the use of standards or standard measuring instruments: *Provided*, That the exercise of these functions for international organizations, governments of friendly countries and scientific societies, educational institutions, firms, corporations, or individuals therein shall be in coordination with other agencies of the United States Government, in particular the Department of State in respect to foreign entities. All requests for the services of the [Bureau] *Institute* shall be made in accordance with the rules and regulations herein established.

Section 5 of that Act

DIRECTOR; POWER AND DUTIES; REPORT

SEC. 5. The director shall be appointed by the President, by and with the advice and consent of the Senate. The Director, shall have the general supervision of the [Bureau] *Institute* its equipment, and the exercise of its functions. The Director shall make an annual report to the Secretary of the Treasury, including an abstract of the work done during the year and a financial statement. The Director may issue, when necessary, bulletins for public distribution, containing such information as may be of value to the

public or facilitate the [Bureau] *Institute* in the exercise of its functions. The Director shall be compensated at the rate now or hereafter in effect for Level IV of the Executive Schedule under section 5315 of title 5, United States Code.

Section 10 of that Act

VISITING COMMITTEE

SEC. 10. There shall be a visiting committee of five members, to be appointed by the Secretary of the Treasury, to consist of men prominent in the various interests involved, and not in the employ of the Government. This committee shall visit the [Bureau] *Institute* at least once a year, and report to the Secretary of the Treasury upon the efficiency of its scientific work and the condition of its equipment. The members of this committee shall serve without compensation, but shall be paid the actual expenses incurred in attending its meetings. The period of service of the members of the orignial committee shall be so arranged that one member shall retire each year, and the appointments thereafter to be for a period of five years. Appointments made to fill vacancies occurring other than in the regular manner are to be made for the remainder of the period in which the vacancy exists.

Section 12 of the Act

WORKING CAPITAL FUND

SEC. 12. (a) The [National Bureau of Standards] *Institute* is authorized to utilize in the performance of its functions the Working Capital Fund established by the Act of June 29, 1950 (64 Stat. 275).

(b) The working capital of the fund shall be available for obligation and payment for any activities authorized by this Act, as amended, and for any activities for which provision is made in the appropriations which reimburse the fund.

(c) In the performance of authorized activities, the Working Capital Fund shall be available and may be reimbursed for expenses of hire of automobile, hire of consultants, and travel to meetings, to the extent that such expenses are authorized for the appropriations of the Department of Commerce.

(d) The fund may be credited with advances and reimbursements, including receipts from non-Federal sources, for services performed under the authority of section 3 of this Act.

(e) As used in this Act the term "cost" shall be construed to include directly related expenses and appropriate charges for indirect and administrative expenses.

(f) The amount of any earned net income resulting from the operation of the fund at the close of each fiscal year shall be paid into the general fund of the Treasury: *Provided*, That such earned net income may be applied to restore and prior impairment of the fund, and to ensure the availability of working capital necessary to replace equipment and inventories.

Section 14 of that Act

CONSTRUCTION AND IMPROVEMENT OF BUILDINGS AND FACILITIES

SEC. 14. Within the limits of funds which are appropriated for the [National Bureau of Standards] *Institute* the Secretary of Commerce is authorized to undertake such construction of buildings and other facilities and to make such improvements to existing buildings, grounds, and other facilities occupied or used by the [National Bureau of Standards] *Institute* as are necessary for the proper and efficient conduct of the activities authorized herein: *Provided,* That no improvement shall be made nor shall any building be constructed under this authority at a cost in excess of $250,000 unless specific provision is made therefor in the appropriation concerned.

Section 15 of that Act

SEC. 15. In the performance of the functions of the [National Bureau of Standards] *Institute* the Secretary of Commerce is authorized to undertake the following activities: (a) The purchase, repair, and cleaning of uniforms for guards; (b) the care, maintenance, protection, repair, and alteration of [Bureau] *Institute* buildings and other plant facilities, equipment, and property; (c) the rental of field sites, and laboratory, office, and warehouse space; (d) the purchase of reprints from technical journals or other periodicals and the payment of page charges for the publication of research papers and reports in such journals; (e) the furnishing of food and shelter without repayment therefor to employees of the Government at Arctic and Antarctic stations; (f) for the conduct of observations on radio propagation phenomena in the Arctic or Antarctic regions, the appointment of employees at base rates established by the Secretary of Commerce which shall not exceed such maximum rates as may be specified from time to time in the appropriation concerned, and without to the civil service and classification laws and titles II and III of the Federal Employees Pay Act of 1945; and (g) the erection on leased property of specialized facilities and working and living quarters when the Secretary of Commerce determines that this will best serve the interests of the Government.

Section 17 of that Act

INTERNATIONAL ACTIVITIES

SEC. 17. (a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds as the Secretary may deem desirable, through the grant of fellowships or any other form of financial assistance, to defray the expenses of foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the [National Bureau of Standards] *Institute* or participating in the exchange of scientific or technical information at the [National Bureau of Standards] *Institute.*

(b) The Congress consents to the acceptance by employees of the [National Bureau of Standards] *Institute* of fellowships, lecture-

ships, or other positions for the performance of scientific or engineering activities or for the exchange of scientific or technical information, offered by a foreign government, and to the acceptance and retention by the employee of the [National Bureau of Standards] *Institute* of any form of financial or other assistance provided by a foreign government as compensation for or as a means of defraying expenses associated with the performance of scientific or engineering activities or the exchange of scientific or technical information, in any case where the acceptance of such fellowship, lectureship, or position or the acceptance and retention of such assistance is determined by the Secretary to be appropriate and consistent with the interests of the United States. For the purposes of this subsection, the definitions appearing in section 7342(a) of title 5 of the United States Code apply. Civil actions may be brought and penalties assessed against any employee who knowingly accepts and retains assistance from a foreign government not consented to by this subsection in the same manner as is prescribed by section 7342(h) of title 5 of the United States Code.

(c) Provisions of law prohibiting the use of any part of any appropriation for the payment of compensation to any employee or officer of the Government of the United States who is not a citizen of the United States shall not apply to the payment of compensation to scientific or engineering personnel of the [National Bureau of Standards] *Institute*.

Section 18 of that Act

FINANCIAL ASSISTANCE TO CURRENT AND PROSPECTIVE EMPLOYEES

SEC. 18. The Director is authorized to expend up to 1 per centum of the funds appropriated for activities of the [National Bureau of Standards] *Institute* in any fiscal year, as the Director may deem desirable, for awards of research fellowships and other forms of financial assistance to students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the [Bureau] *Institute*. The selection of persons to receive such fellowships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the [Bureau] *Institute*.

Section 19 of that Act

POST-DOCTORAL FELLOWSHIP PROGRAM

SEC. 19. The [National Bureau of Standards] *Institute*, in conjunction with the National Academy of Sciences, shall establish and conduct a post-doctoral fellowship program which shall be organized and carried out in substantially the same manner as the National Academy of Sciences/National Research Council Post-Doctoral Research Associate Program that was in effect prior to 1986, and which shall include not less than twenty nor more than forthy new fellows per fiscal year.

REPORTS TO CONGRESS

SEC. 20. (a) The Director shall keep the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives fully and currently informed with regard to all of the activities of the National Institute of Technology.

(b) The Director shall justify in writing all changes in policies regarding fees for currently offered standard reference materials and calibration services, including a description of the anticipated impact of any proposed change on demand for and anticipated revenues from the materials and services. Changes in fees shall not be effective unless and until the Director has submitted the proposed schedule and justification to the Congress and a period of 30 days has elapsed since such submission, except that the requirement of this sentence shall not apply with respect to adjustments which are based solely on changes in the costs of raw materials or of producing and delivering standard reference materials or calibration services.

STUDIES BY THE NATIONAL ACADEMIES OF ENGINEERING AND SCIENCES

SEC. 21. The Director may periodically contract with the National Academy of Engineering and the National Academy of Sciences for advice and studies to assist the Institute to serve United States industry and science. The advice and studies may include—

(1) significant national needs and opportunities in manufacturing and emerging technologies; and

(2) potential activities of the Institute, in cooperation with industry and the States, to assist in the transfer and dissemination of new technologies for manufacturing and quality assurance.

OFFICE OF EXTENSION SERVICES

SEC. 22. (a) There is established within the National Institute of Technology an Office of Extension Services, which shall assist State and local governments and business throughout the United States by—

(1) acting as a point of contact within the Institute for State and local governments and for private sector business, particularly small business;

(2) working with the Federal Laboratory Consortium for Technology Transfer, the National Technical Information Service, the Office of Productivity, Technology, and Innovation, the Small Business Administration, and other Federal agencies to ensure that State and local governments and United States businesses have information about Federal research and development programs and results;

(3) administer, for the Secretary and the Director, the Centers program established under section 23 of this Act; and

(4) administer, for the Secretary and the Director, the Pilot State Technology Extension Program established under section 24 of this Act.

(b) The Office of Extension Services shall be headed by an Associate Director for Extension Services, who shall be appointed by the Director.

CENTERS FOR THE TRANSFER OF MANUFACTURING TECHNOLOGY

SEC. 23. (a) The Secretary, through the Director, shall provide assistance for the creation and support of regional Centers for the Transfer of Manufacturing Technology. Such centers shall be affiliated with any nonprofit institution or organization, or group thereof, that applies for and is awarded a grant under this section. Individual awards shall be decided on the basis of merit review, peer review, or similar mechanism. The objective of the Centers is to enhance productivity and technological performance in United States manufacturing through—

(1) the transfer of new basis manufacturing technology and techniques developed at the Institute to Center and, through them, to manufacturing companies throughout the United States.

(2) the participation of individuals from industry, universities, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

(3) efforts to make new manufacturing technology and processes usable by small and medium-sized companies in the United States;

(4) the dissemination of scientific, engineering, technical, and management information about manufacturing to industrial firms, including small and medium-sized manufacturing companies;

(5) the utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute; and

(6) the development of continuing financial support from other Federal mission agencies, from State and local governments, and from industry and universities through, among other means, fees, licenses, and royalties.

(b) The activities of the Centers shall include—

(1) the establishment of experimental automated manufacturing systems and other advanced production technologies, based on research by the Institute, for the purpose of demonstrations, technology transfer, and research;

(2) the transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, including, whenever possible, small and medium-sized manufacturers; and

(3) loans, on a selective basis, of items of advanced manufacturing equipment to small manufacturing firms with less than 100 employees.

(c)(1) The Secretary may provide financial support to any Center created under subsection (a) of this section for a period not to exceed six years. The Secretary may not provide to a Center more than 50 percent of the capital and annual operating and maintenance funds required to create and maintain such Center.

(2) Any nonprofit institution, or group thereof, or consortia of nonprofit institutions may submit to the Secretary an application for financial support under this subsection, in accordance with procedures established by the Secretary. In order to receive assistance under this section, an applicant shall provide adequate assurances that it will contribute 50 percent or more of the proposed Center's capital and annual operating and maintenance costs. Each applicant shall also submit, as part of such applicant's proposal, a plan for the allocation of the legal rights associated with any invention which may result from the proposed Center's technology transfer and research activities.

(3) The Secretary shall subject each such application to merit review, peer review, or other similar process. In making a decision whether to approve such application and provide financial support under this subsection, the Secretary shall consider (A) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and research to adapt manufacturing technologies to the needs of particular industrial sectors, (B) geographical diversity, and (C) the percentage of funding from other sources.

(4) Each Center which receives a grant under this section shall be evaluated during its third year of operation by an evaluation panel appointed by the Secretary. Each such evaluation panel shall be composed of private experts, none of whom shall be connected with the involved Center, and Federal officials. An official of the National Institute of Technology shall chair the panel. Each evaluation panel shall measure the involved Center's performance against the objectives specified in this section. The Secretary shall not provide funding for the fourth through the sixth years of such Center's operation unless the evaluation is positive. In no event shall funding for a Center be provided by the Department of Commerce after the sixth year of the operation of a Center.

(5) The provisions of chapter 18 of title 35, United States Code, shall (to the extent not inconsistent with this section) apply to the promotion from of technology research by Centers under this section.

(d) There are authorized to be appropriated for the purposes of carrying out this section not to exceed $18,000,000 for fiscal year 1988, not to exceed $30,000,000 for fiscal year 1989, and not to exceed $42,000,000 for fiscal year 1990. Such sums shall remain available until expended.

PILOT STATE TECHNOLOGY EXTENSION PROGRAM

SEC. 24. (a) The Secretary, through the Director, shall establish a three-year Pilot State Technology Extension Program (hereafter in this section referred to as the "Program"), designed to provide financial assistance to State-operated activities which demonstrate innovative methods by which the Federal Government and the States can work together to help improve the technology and competitiveness of American business.

(b) The Secretary may provide financial assistance to States which propose innovative new State activities to transfer Federally-funded research, technology, and expertise, including technology from Federal laboratories, to business within those States. Any State desiring

to receive a grant under the Program shall submit an application to the Secretary, in such manner and form as the Secretary may specify. The application shall describe in detail the particular activities the State proposes to conduct in the course of such participation, the manner in which it proposes to conduct such activities, and the nature and extent of its need for assistance to support such activities. The Secretary shall, during the Program, select and approve not more than 15 States (or regional consortia of States) which have submitted application to receive grants under the Program to develop or expand State technology extension efforts. The criteria for such selections shall be the merit of the proposals, the degree to which the application proposes to transfer Federally-funded research and technology to businesses, and geographical diversity. Such grants may be for periods of one to three years, starting in fiscal year 1988.

(c) Grants under the Program shall be made in such amounts and on such terms and conditions, consistent with the objectives of this section, as the Secretary shall prescribe, except that—

(1) the proceeds of each such grant must be used to increase the number of businesses served by the State's technology assistance effort or the quality of such services, and no part of the Federal grant may be used for administrative expenses; and

(2) each State receiving such a grant must provide satisfactory assurances that it will pay for at least 25 percent of the cost of the pilot technology extension effort during the period in which such State receives the grant and that such State contribution will be in addition to (rather than in lieu of) any other expenditures which would otherwise be made from State and local funds for such purposes.

(d) Each State receiving grants under this section shall submit annual reports to the Secretary on the conduct of its activities under the Program. At the end of fiscal year 1990, the Secretary shall submit to the Congress a full and complete report on the operation of the Program.

(e) There is authorized to be appropriated $2,000,000 for each of fiscal years 1988, 1989, and 1990 for activities under this section.

AUTHORIZATION OF APPROPRIATIONS

SEC. 25. (a) There are authorized to be appropriated for fiscal year 1988 to the Secretary of Commerce to carry out activities performed by the Institute (other than activities performed under sections 23 and 24 of this Act) the sums set forth in the following line items:

(1) Measurement Research and Technology: $46,952,000.

(2) Engineering Measurements and Manufacturing: $51,047,000.

(3) Materials Science and Engineering: $26,157,000.

(4) Computer Science and Technology: $9,666,000.

(5) Research Support Activities: $22,678,000.

(6) Research Facilities: $9,500,000.

(b) Notwithstanding any other provision of this or any other Act—

(1) of the amount authorized under paragraph (1) of subsection (a) of this section, $9,000,000 is authorized only for the pur-

pose of research in process and quality control and $1,500,000 is authorized only for the purpose of computerized data bases;

(2) of the amount authorized under paragraph (2) of subsection (a) of this section, $5,000,000 is authorized only for research in automated manufacturing, $2,000,000 is authorized only to adapt institute automated manufacturing technology to meet the needs of small business and various industrial sectors, $3,700,000 is authorized only for the Center for Building Technology, $5,800,000 is authorized only for the Center for Fire Research, $3,500,000 is authorized only for research to improve lightwave communication systems and related technologies, $3,000,000 is authorized only for the purpose of research to improve bioprocess engineering, $500,000 is authorized only for new microwave measurements, and $3,000,000 is authorized only for new research on semiconductor materials, devices, and manufacturing processes;

(3) of the amount authorized under paragraph (3) of subsection (a) of this section, $3,500,000 is authorized only for the purpose of research to improve high-performance composites;

(4) of the amount authorized under paragraph (4) of subsection (a) of this section, $1,500,000 is authorized only for the purpose of research in advanced information systems;

(5) of the amount authorized under paragraph (5) of subsection (a) of this section, $9,213,000 is authorized only for technical competence fund projects in new areas of high technical importance, and $1,168,000 is authorized only for the Postdoctoral Research Associates Program and related new personnel; and

(6) of the amount authorized under paragraph (6) of subsection (a) of this section, $6,500,000 is authorized only for the Cold Neutron Research Facility, and $3,000,000 is authorized only for semiconductor research facilities.

(c)(1) Funds may be transferred among the line items listed in subsection (a) of this section so long as the net funds transferred to or from any line item do not exceed 10 percent of the amount authorized for that line item in such subsection and the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives are notified in advance of any such transfer.

(2) In addition, the Secretary may propose transfers to or from any line item exceeding 10 percent of the amount authorized for the line item in subsection (a) of this section, but a full and complete explanation of any such proposed transfer and the reason for such transfer must be transmitted in writing to the President of the Senate, the Speaker of the House or Representatives, and the appropriate authorizing committees of the Senate and House of Representatives. The proposed transfer may be made only when 30 calendar days have passed after the transmission of such written explanation.

(d) In addition to any sums otherwise authorized by this Act, there are authorized to be appropriated to the Secretary for fiscal year 1988 such sums as were authorized but not appropriated for the Cold Neutron Source Facility for fiscal year 1987. Furthermore, the Secretary may accept contributions of funds, to remain available until expended, for the design, construction, and equipment of the

Cold Neutron Source Facility, notwithstanding the limitations of section 14 of this Act.

(e) In addition to any sums otherwise authorized by this Act, there are authorized to be appropriated to the Secretary for fiscal year 1988 such additional sums as may be necessary to make any adjustments in salary, pay, retirement, and other employee benefits which may be provided for by law.

(f) Appropriations made under the authority provided in this section shall remain available for obligation, for expenditure, or for obligations and expenditure for periods specified in the Acts making such appropriations.

(g) There are authorized for the Institute an additional 440 full-time positions.

SAVINGS PROVISION

SEC. 26. All rules and regulations, determinations, standards, contracts, certifications, authorizations, delegations, or other actions duly issued, made, or taken by or pursuant to this Act, or under the authority of any other statutes which resulted in the assignment of functions or activities of the Secretary, the Department, the Director, or the Institute, as are in effect immediately before the date of enactment of this section, and not suspended by the Secretary, the Director, the Institute or the courts, shall continue in full force and effect after the date of enactment of this section until modified or rescinded.

Section 20 of that Act

APPROPRIATIONS

SEC. [20] *27.* Appropriations to carry out the provisions of this Act may remain available for obligation and expenditure for such period or periods as may be specified in the Act making such appropriations.

THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

Section 4 of that Act

SEC. 4. DEFINITIONS.

As used in this Act, unless the context otherwise requires, the term—

(1)-(12) * * *

(13) "Director", as used in section 7 of this Act, means the Director of the National Institute of Technology.

Section 5 of that Act

SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.

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SEC. 6. CLEARINGHOUSE ON STATE AND LOCAL INITIATIVES ON PRODUCTIVITY, TECHNOLOGY, AND INNOVATION.

(a) ESTABLISHMENT.—There is established within the Office of the Secretary a Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation. The Clearinghouse shall serve as

a central repository of information on initiatives by States and local governments to enhance the competitiveness of American business through the stimulation of productivity, technology, and innovation.

(b) RESPONSIBILITIES.—The Secretary shall—

(1) establish relationships with State and local governments, and regional and multistate organizations of such governments, which carry out such initiatives;

(2) collect information on the nature, extent, and effects of such initiatives, particularly information useful to Federal agencies, State and local governments, and businesses throughout the United States;

(3) disseminate information collected under paragraph (2) of this subsection to Congress, Federal agencies, State and local government agencies, and the public, through reports, directories, handbooks, conferences, and seminars;

(4) study ways in which Federal agencies, including Federal laboratories, are able to use their policies and programs to assist State and local governments to enhance the competitiveness of American business;

(5) make periodic recommendations to the Secretary and other officials within the Department of Commerce concerning modifications in Federal policies and programs which improve Federal assistance to State and local technology programs;

(6) when requested, assist State and local governments, and regional and multistate organizations of such governments, to evaluate which types of State and local programs are most effective in enhancing the competitiveness of American business through the stimulation of productivity, technology, and innovation; and

(7) ensure that the Clearinghouse coordinates its activities with activities of the Office of Extension Services at the National Institute of Technology.

(c) CONTRACTS.—In carrying out subsection (b)(1) of this section, the Secretary may enter into contracts for the purpose of assisting State and local governments to evaluate initiatives. The Secretary shall not enter into a contract with a contractor unless the Secretary determines that there is little or no likelihood that a conflict of interest would exist between that contractor and the government agency to be evaluated.

(d) ANNUAL REPORT.—The Secretary shall prepare and transmit to the Congress an annual report on initiatives by State and local governments to enhance the competitiveness of American businesses through the stimulation of productivity, technology and innovation.

SEC. 7. ADVANCED TECHNOLOGY PROGRAM.

(a) ESTABLISHMENT.—The Secretary, through the Director and with the advice of the Assistant Secretary, shall establish an Advanced Technology Program for the purpose of assisting United States industry to create the generic technology necessary to—

(1) commercialize economically significant new scientific discoveries and technologies rapidly; and

(2) refine advanced manufacturing technologies.

(b) ACTIVITIES.—Under the Program established in subsection (a) of this section, the Secretary, subject to the limitations set forth in subsection (c) of this section, shall—

(1) enter into contracts with United States businesses with less than 500 employees when, in the judgment of the Secretary, such contracts will, through the creation of new generic technology, significantly promote the commercialization of a new scientific discovery or technology of great potential economic value or significantly promote the refinement of an advanced manufacturing technology; and

(2) encourage United States companies to form joint research and development ventures for the purposes of creating the generic technology necessary for rapid commercialization or advanced manufacturing and, where the Secretary determines it to be appropriate, provide financial awards to assist the creation and operation of such joint ventures.

(c) LIMITATIONS.—When entering into contracts or making awards under subsection (b) of this section, the following limitations shall apply:

(1) No contract or award may be made until the research project in question has been subject to a merit review, peer review, or other similar procedure and has, in the opinion of the reviewers appointed by the Secretary, been shown to have scientific and technical merit.

(2) In deciding which specific discoveries or technologies to assist, the Secretary shall give preference to those discoveries and technologies which have both great economic potential and which have received special attention in other countries.

(3) In the case of joint research and development ventures, the Secretary shall not make an award unless, in the judgment of the Secretary, the industry in question is so fragmented or financially pressed as to be unlikely to form a research venture or to form a research venture quickly unless Federal aid is offered.

(4) No Federal contract under paragraph (1) of this subsection shall exceed $1,000,000. No Federal award to a joint research and development venture under paragraph (2) of this subsection shall be for more than one-third of the total cost of the joint venture over its duration or its first five years, whichever occurs first. No award shall be made for more than five years.

(5) No contract with a small business or award to a joint research and development venture shall be made unless and until the prospective recipient provides satisfactory assurances that the results of such research project will be published in the open literature and made widely available to other United States companies, although each recipient shall have the right to file patent applications before being required to publish such results.

(6) The Secretary shall establish procedures regarding financial reporting and auditing to ensure that such contracts and awards are used for the purposes specified in this section and in accordance with sound accounting practices.

(7) If a small business or joint research and development venture fails before the completion of the period for which a contract or award has been made, the unspent balance of the Fed-

eral funds shall be returned by the recipient to the Department of Commerce.

(8) In determining whether to make an award to a particular joint research and development venture, the Secretary shall consider whether the corporate members of the joint venture have made provisions for the participation of small United States businesses in such joint venture.

(9) The Secretary may, as appropriate, authorize the participation of the National Institute of Technology in any joint research and development venture created under this section.

(10) As used in this section, the term "joint research and development venture" has the meaning given to such term in section 2(6) of the National Cooperative Research Act of 1984 (15 U.S.C. 4301(6)).

(d) ADVISORY MECHANISMS.—In order to provide the merit review, peer review, or similar review required under subsection (c)(1) of this section, and in order to provide general advice on national technology needs and opportunities, the Secretary and the Director may create such advisory mechanisms as they consider appropriate. The Secretary shall take steps to ensure that no individual assigned to review a particular application has a conflict of interest regarding that application.

Section 6 of that Act

SEC. [6] *8.* CENTERS FOR INDUSTRIAL TECHNOLOGY.

(a)–(e) * * *

Section 7 of that Act

SEC. [7] *9.* GRANTS AND COOPERATIVE AGREEMENTS.

(a) * * *

(b) ELIGIBILITY AND PROCEDURE.—Any person or institution may apply to the Secretary for a grant or cooperative agreement available under this section. Application shall be made in such form and manner, and with such content and other submissions, as the [Director] *Assistant Secretary* shall prescribe. The Secretary shall act upon each such application within 90 days after the date on which all required information is received.

(c) * * *

Section 8 of that Act

SEC. [8] *10.* NATIONAL SCIENCE FOUNDATION COOPERATIVE RESEARCH CENTERS.

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Section 9 of that Act

SEC. [9] *11.* ADMINISTRATIVE ARRANGEMENTS.

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Section 10 of that Act

SEC. [10] *12.* UTILIZATION OF FEDERAL TECHNOLOGY.

(a)–(d)* * *

(e) ESTABLISHMENT OF FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER.—(1) There is hereby established the Federal Laboratory Consortium for Technology Transfer (hereinafter referred to as the "Consortium") which, in cooperation with Federal Laboratories and the private sector, shall—

(A) develop and (with the consent of the Federal laboratory concerned) administer techniques, training courses, and materials concerning technology transfer to increase the awareness of Federal laboratory employees regarding the commercial potential of laboratory technology and innovations;

(B) furnish advice and assistance requested by Federal agencies and laboratories for use in their technology transfer programs (including the planning of seminars for small business and other industry);

(C) provide a clearinghouse for requests, received at the laboratory level, for technical assistance from States and units of local governments, businesses, industrial development organizations, not-for-profit organizations including universities, Federal agencies and laboratories, and other persons, and—

(i) to the extent that such requests can be responded to with published information available to the National Technical Information Service, refer such requests to that Service, and

(ii) otherwise refer these requests to the appropriate Federal laboratories and agencies;

(D) facilitate communication and coordination between Offices of Research and Technology Applications of Federal laboratories;

(E) utilize (with the consent of the agency involved) the expertise and services of the National Science Foundation, the Department of Commerce, the National Aeronautics and Space Administration, and other Federal agencies, as necessary;

(F) with the consent of any Federal laboratory, facilitate the use by such laboratory of appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems;

(G) with the consent of any Federal laboratory, assist such laboratory to establish programs using technical volunteers to provide technical assistance to communities related to such laboratory;

(H) facilitate communication and cooperation between Offices of Research and Technology Applications of Federal laboratories and regional, State, and local technology transfer organizations;

(I) when requested, assist colleges or universities, businesses, nonprofit organizations, State or local governments, or regional organizations to establish programs to stimulate research and to encourage technology transfer in such areas as technology program development, curriculum design, long-term research

planning, personnel needs projections, and productivity assessments; and

(J) seek advice in each Federal laboratory consortium region from representatives of State and local governments, large and small business, universities, and other appropriate persons on the effectiveness of the program (and any such advice shall be provided at no expense to the Government).

(2) The membership of the Consortium shall consist of the Federal laboratories described in clause (1) of subsection (b) and such other laboratories as may choose to join the Consortium. The representatives to the Consortium shall include a senior staff member of each Federal laboratory which is a member of the Consortium and a representative appointed from each Federal agency with one or more member laboratories.

(3) The representatives to the Consortium shall elect a Chairman of the Consortium.

(4) The Director of the [National Bureau of Standards] *National Institute of Technology* shall provide the Consortium, on a reimbursable basis, with administrative services, such as office space, personnel, and support services of the [Bureau] *Institute*, as requested by the Consortium and approved by such Director.

(5) Each Federal laboratory or agency shall transfer technology directly to users or representatives of users, and shall not transfer technology directly to the Consortium. Each Federal laboratory shall conduct and transfer technology only in accordance with the practices and policies of the Federal agency which owns, leases, or otherwise uses such Federal laboratory.

(6) Not later than one year after the date of the enactment of this subsection, and every year thereafter, the Chairman of the Consortium shall submit a report to the President, to the appropriate authorization and appropriation committees of both Houses of the Congress, and to each agency with respect to which a transfer of funding is made (for the fiscal year or years involved) under paragraph (7), concerning the activities of the Consortium and the expenditures made by it under this subsection during the year for which the report is made.

(7)(A) Subject to subparagraph (B), an amount equal to 0.005 percent of that portion of the research and development budget of each Federal agency that is to be utilized by the laboratories of such agency for a fiscal year referred to in subparagraph (B)(ii) shall be transferred by such agency to the [National Bureau of Standards] *National Institute of Technology* at the beginning of the fiscal year involved. Amounts so transferred shall be provided by the [Bureau] *Institute* to the Consortium for the purpose of carrying out activities of the Consortium under this subsection.

(B) A transfer shall be made by any Federal agency under subparagraph (A), for any fiscal year, only if—

(i) the amount so transferred by that agency (as determined under such subparagraph) would exceed $10,000; and

(ii) such transfer is made with respect to the fiscal year 1987, 1988, 1989, 1990, or 1991.

(C) The heads of Federal agencies and their designees, and the directors of Federal laboratories, may provide such additional support for operations of the Consortium as they deem appropriate.

(8)(A) The Consortium shall use 5 percent of the funds provided in paragraph (7)(A) to establish demonstration projects in technology transfer. To carry out such projects, the Consortium may arrange for grants or awards to, or enter into agreements with, nonprofit State, local, or private organizations or entities whose primary purposes are to facilitate cooperative research between the Federal laboratories and organizations not associated with the Federal laboratories, to transfer technology from the Federal laboratories, and to advance State and local economic activity.

(B) The demonstration projects established under subparagraph (A) shall serve as model programs. Such projects shall be designed to develop programs and mechanisms for technology transfer from the Federal laboratories which may be utilized by the States and which will enhance Federal, State, and local programs for the transfer of technology.

(C) Application for such grants, awards, or agreements shall be in such form and contain such information as the Consortium or its designee shall specify.

(D) Any person who receives or utilizes any proceeds of a grant or award made, or agreement entered into, under this paragraph shall keep such records as the Consortium or its designee shall determine are necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition of such proceeds and the total cost of the project in connection with which such proceeds were used.

(f)–(g) * * *

Section 11 of that Act

SEC. [11] *13.* COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS.

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Section 12 of that Act

SEC. [12] *14.* REWARDS FOR SCIENTIFIC, ENGINEERING, AND TECHNICAL PERSONNEL OF FEDERAL AGENCIES.

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Section 13 of that Act

SEC. [13] *15.* DISTRIBUTION OF ROYALTIES RECEIVED BY FEDERAL AGENCIES.

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Section 14 of that Act

SEC. [14] *16.* EMPLOYEE ACTIVITIES.

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Section 15 of that Act

SEC. [15] *17.* NATIONAL TECHNOLOGY MEDAL.

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Section 16 of that Act

SEC. [16] *18.* PERSONNEL EXCHANGES.

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Section 17 of that Act

[SEC. 17. AUTHORIZATION OF APPROPRIATIONS.

[(a) There is authorized to be appropriated to the Secretary for purposes of carrying out section 6, not to exceed $19,000,000 for the fiscal year ending September 30, 1981, $40,000,000 for the fiscal year ending September 30, 1982, $50,000,000 for the fiscal year ending September 30, 1983, and $60,000,000 for each of the fiscal years ending September 30, 1984, and 1985.

[(b) In addition to authorizations of appropriations under subsection (a), there is authorized to be appropriated to the Secretary for purposes of carrying out the provisions of this Act, not to exceed $5,000,000 for the fiscal year ending September 30, 1981, $9,000,000 for the fiscal year ending September 30, 1982, and $14,000,000 for each of the fiscal years ending September 30, 1983, 1984, and 1985.

[(c) Such sums as may be appropriated under subsections (a) and (b) shall remain available until expended.

[(d) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorized by law.]

SEC. 19. AUTHORIZATION OF APPROPRIATIONS.

(a)(1) There is authorized to be appropriated to the Secretary for the purposes of carrying out sections 5, 12(g), and 17 of this Act not to exceed $4,900,000 for the fiscal year ending September 30, 1988.

(2) Of the amount authorized under paragraph (1) of this subsection, $2,400,000 is authorized only for the Office of Productivity, Technology, and Innovation; $2,000,000 is authorized only for the purpose of carrying out the requirements of the Japanese technical literature program established under section 5(e) of this Act; and $500,000 is authorized only for the patent licensing activities of the National Technical Information Service.

(b) In addition to the authorization of appropriations provided under subsection (a) of this section, there is authorized to be appropriated to the Secretary for the purposes of carrying out section 6 of this Act not to exceed $1,000,000 for the fiscal year ending September 30, 1988, $1,500,000 for the fiscal year ending September 30, 1989, and $2,000,000 for the fiscal year ending September 30, 1990.

(c) In addition to the authorizations of appropriations made under subsections (a) and (b) of this section, there is authorized to be appropriated to the Secretary for the purposes of carrying out section 7 (a) and (b) of this Act not to exceed $15,000,000 for the fiscal year ending September 30, 1988.

(d) Such sums as may be appropriated under subsections (a), (b) and (c) shall remain available until expended.

(e) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorize by law.

Section 18 of that Act

SEC. [18] *20.* SPENDING AUTHORITY.

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THE INTERNATIONAL AIR TRANSPORTATION FAIR COMPETITIVE PRACTICE ACT OF 1974

Section 2 of that Act

DISCRIMINATORY AND UNFAIR COMPETITIVE PRACTICES

SEC. 2. (a) * * *

(b)(1) Whenever the Civil Aeronautics Board, upon complaint or upon its own initiative, determines that a foreign government or instrumentality, including a foreign air carrier (A) engages in unjustifiable or unreasonable discriminatory, predatory, or anticompetitive practices against a United States air carrier or (B) imposes unjustifable or unreasonable restrictions on access of a United States air carrier to foreign markets, the Board may take such action as it deems to be in the public interest to eliminate such practices or restrictions. Such actions may include, but are not limited to, the denial, transfer, alteration, modification, amendment, cancellation, suspension, limitation, or revocation of any foreign air carrier permit or tariff pursuant to the powers of the Board under the Federal Aviation Act of 1958.

(2) Any United States air carrier or any agency of the Government of the United States may file a complaint under this section with the Civil Aeronautics Board. The Board shall approve, deny, dismiss, set such complaint for hearing or investigation, or institute other proceedings proposing remedial action within 60 days after receipt of the complaint. The Board may extend the period for taking such action for an additional period or periods of up to 30 days each if the Board concludes that it is likely that the complaint can be satisfactorily resolved through negotiations with the foreign government or instrumentality during such additional period, but in no event may the aggregate period for taking action under this subsection exceed [180 days] *90 days* from receipt of the complaint. [In considering any complaint, or in any proceedings under its own initiative, under this subsection the Board shall (A) solicit the views of the Department of State and the Department of Transportation and (B) provide any affected air carrier or foreign air carrier with reasonable notice and such opportunity to file written evidence and argument as is consistent with acting on the complaint within the time limits set forth in this subsection.]

(3) In considering any complaint, or in any proceedings under its own initiative, under this subsection, the Secretary shall—

(A) solicit the views of the Department of State, the Department of Commerce, and the Office of the United States Trade Representative; and

(B) provide any affected air carrier or foreign air carrier with reasonable notice and such opportunity to file written evidence and argument as is consistent with acting on the complaint within the time limit set forth in this subsection.

[3] *(4)* Any action proposed by the Board pursuant to this section shall be transmitted to the President pursuant to section 301 of the Federal Aviation Act of 1958 (49 U.S.C. 1461).

(c)–(d) * * *

(e) Not later than 120 days after receiving a complaint under this section, the Secretary of Transportation shall report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Public Works and Transportation of the House of Representatives on actions that have been taken under this section with respect to such complaint, unless such complaint is withdrawn prior to the date upon which the report is required to be submitted.

THE ACT OF JULY 16, 1914

The first section of that Act

[Apprentices in the Bureau of Standards may be promoted after satisfactory apprenticeship, with the approval of the Civil Service Commission, to positions corresponding to the journeymen grades for which their duties logically prepare them, without regard to apportionment: *Provided*, That they thus acquire no rights to transfer to other lines of work.]

THE ACT OF MARCH 4, 1913

The first section of that Act

[Materials for fireproof buildings, other structural materials, and all materials, other than materials for paving and for fuel, purchased for and to be used by the government of the District of Columbia, when necessary in the judgment of the commissioners to be tested, shall be tested by the Bureau of Standards under the same conditions as similar testing is required to be done for the United States Government.]

THE ACT OF MAY 14, 1930

The first section of that Act

[There is hereby authorized to be established in the Bureau of Standards of the Department of Commerce a national hydraulic laboratory for the determination of fundamental data useful in hydraulic research and engineering, including laboratory research relating to the behavior and control of river and harbor waters, the study of hydraulic structures and water flow, and the development and testing of hydraulic instruments and accessories: *Provided*, That no test, study, or other work on a problem or problems connected with a project the prosecution of which is under the jurisdiction of any department or independent agency of the Government shall be undertaken in the laboratory herein authorized until a written request to do such work is submitted to the Director of the Bureau of Standards by the head of the department or independent agency charged with the execution of such project: *And provided further*, That any State or political subdivision thereof may obtain a test, study, or other work on a problem connected with a project the prosecution of which is under the jurisdiction of such State or political subdivision thereof.]

ADDITIONAL VIEWS OF MR. WILSON

There are a number of changes to our laws that should be made to improve America's competitive position both at home and in foreign markets. Overall, the Committee's bill is helpful to this effort, and that is why I support it. I am particularly pleased that the bill contains a provision, the "Exon Amendment", that clarifies the President's authority to prevent foreign takeovers of U.S. companies when such an action would harm our national security. However, parts of the bill are troublesome because they create new and potentially expensive programs, some of which overlap in function, that suggest a turn by the Committee towards the piecemeal, indirect creation of a national "industrial policy," at a time when formerly explicit advocates of such a policy have abandoned direct efforts to create it.

A major thrust of the bill is to improve the technological capabilities of small and mid-size businesses in the United States. This, it is argued, is an integral and necessary part of our national effort to increase our competitiveness. Unfortunately, rather than developing a coordinated program, the Committee has decided to join together a number of what seem disparate and only casually related legislative proposals. The result is not synergism but agglomeration.

Among the "new starts" in the bill are:

—A "Pilot State Technology Extension Program". This is a 3 year grant program to a limited number of states to help them improve the transfer of research from Federal labs to private businesses. At a time when the Federal Government is moving away from categorical grants, one must wonder why States cannot and should not use their block grant monies for this purpose. The fact is that a number of states have done so already, undertaking this type of effort without specific Federal financial inducements. Is it really essential, when a number of states have developed a successful program, that Congress federalize it, bringing it under the national fiscal wing? I will wager that most of the intended beneficiaries of this Congressional good intention would prefer to proceed without Federal involvement or direction.

—A "Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation" is established in the Office of the Secretary of Commerce. This office is supposed to catalog what is going on in the states and share the information with "Federal and non-Federal parties". The need for this program is anything but clear: The basis for the Pilot Extension Program, above, is that again some States have developed their own extension programs. And through the Pilot Extension Program, the Committee wants to provide new Federal funding to extend technology to the others. Therefore, it makes little

sense to establish yet another new Federal office to collect and disseminate information which will apparently be widely available by other means. In addition, there already exist a number of non-Federal intergovernmental entities, state agencies, and private sector consultants that provide these services.

—Twelve Regional Centers for the Transfer of Manufacturing Technology, at a cost of $90 million over three years. These centers, which would be federally funded for up to half of their costs, would help transfer technology from an existing National Bureau of Standards program, the Automated Manufacturing Research Facility, to the private sector. This is a laudable goal—one which NBS already pursues on a modest scale, thereby suggesting that the regional centers are not needed. Also, if the Federal Government is going to help pay for these regional centers, why should we also fund individual state entities that are designed to pursue the same purpose—technology transfer? Clearly, there is duplication here.

—"Advanced Technology Program". Described as a civilian version of DARPA (the defense Advanced Research Projects Agency), this is a real step towards industrial policy. The ATP is designed "to create generic technology to commercialize economically significant new scientific discoveries and technologies rapidly and refine advanced manufacturing technologies." While funded at $15 million for fiscal year 1988, it is likely that an effort would be made to expand the program in later years. In any event, the time may be here for the United States to join our international trading "partners" by funding commercial-targeted research. For example, the Congress will be soon considering significant funding for research on semiconductors. However, while the SEMATECH proposal is receiving a great deal fo attention, ATP is moving ahead generally unnoticed—despite the important policy decision it embodies.

The bottom line is that more than $100 million in new expenditures is authorized, with no suggestion offered as to how we can pay for these new programs. Assuming just for the sake of argument that all of these new programs are necessary and appropriate, the Committee should at the least have considered savings in other programs under its jurisdiction to offset the new spending—but it did not.

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